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ORNITHOLOGY.—*Two new birds from Morelos, Mexico.*[1]

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While studying the Mexican birds belonging to the United States National Museum and to the Fish and Wildlife Service, United States Department of the Interior, I discovered two previously unrecognized subspecies from Morelos and neighboring states. For permission to describe these forms I am under obligation to Dr. John W. Aldrich, biologist of the Fish and Wildlife Service. This study was aided by a grant from the Faculty Research Fund by the Horace H. Rackham School of Graduate Studies in the University of Michigan.

Chamaethlypis poliocephala pontilis, n. subsp.

Type.—U.S.N.M. 186396; adult male; Puente de Ixtla, Morelos; June 8, 1903; E. W. Nelson and E. A. Goldman, original no. 10144.

Characters.—Agrees in color with *Chamaethlypis poliocephala poliocephala* (Baird), from Sinaloa to Nayarit, but wing and tail longer.

Agrees with *C. poliocephala ralphi* (Ridgway), from Texas, in having whitish eyelids and pale posterior underparts (i.e., lower breast and belly mixed with pale yellow, white, and buffy; flanks pale buffy brown), but throat and upper breast deeper yellow; back more olive, less grayish; wing and tail longer.

Differs from *C. poliocephala palpebralis* Ridgway, from Caribbean Mexico, in having whitish (instead of yellowish) eyelids; paler coloration throughout; and larger size.

Chamaethlypis poliocephala caninucha (Ridgway) and *C. poliocephala icterotis* (Ridgway), both from Central America, have black eyelids and are smaller and much more brightly colored.

Measurements.—Four males: wing, 61.5–63 (62.3); tail, 66–68.5 (67.3). Three females: wing 55.5–58.5 (57.0); tail, 59.5–61.5 (60.3).

In *poliocephala* the wing measures 57–58.5 in the male (♀ 52); tail, 60.5–62 (♀ 57.5). In *ralphi* the wing is 57.5–60 (♀ 52.5–55); tail, 57.5–65 (♀ 56.5–58.5). In *palpebralis* the wing is 54.5–60 (♀ 53–57); tail, 56.5–65 (♀ 55.5–62).

Range.—Pacific watershed of central Mexico, in states of Morelos and Michoacán.

Material examined.—Morelos (Puente de Ixtla, 1; Yautepec, 1); Michoacán (Queréndaro, 1; Zamora, 1; Los Reyes, 2). Also adequate series of the described forms, including the types of *poliocephala, ralphi, palpebralis, caninucha,* and *icterotis.*

Sicalis luteola mexicana, n. subsp.

Type.—U.S.N.M. 186386; adult male; Puente de Ixtla, Morelos; June 8, 1903; E. W. Nelson and E. A. Goldman, original no. 10149.

Characters.—Differs from *Sicalis luteola chrysops* Sclater, of the Caribbean slope of Mexico, in larger size; paler, more golden yellow (less greenish yellow) crown, rump, and underparts; dark streaks of crown narrower and not extending forward beyond eye.

Measurements.—Eleven males: wing, 68–72.5 (70.0); tail, 43–49 (45.8). Two females: wing, 66–70 (68.0); tail, 43.5–46 (44.8).

In *chrysops* 13 males measure as follows: wing, 63–67 (65.8); tail, 41–44.5 (43.7). Three females: wing, 60–65 (62.0); tail, 41–43.5 (42.0).

Remarks.—The type of *chrysops,* for which the locality is given simply as "Mexico merid.," was received from the dealer Parzudaki. The figure of the type (Ibis, 1872: pl. 2, fig. 1) clearly indicates a dark bird. The measurements of the type published by Sclater (Proc. Zool. Soc. London, 1861: 376) and by Sharpe

[1] Received October 29, 1942.

(Cat. Birds Brit. Mus. 12: 384. 1888) are not identical, yet both sets of measurements show that the type was a small individual. I therefore restrict the type locality of *chrysops* to Orizaba, Veracruz, where the small, dark subspecies currently passing under the name is known to occur, and which town was a likely place of origin for a collection in 1861.

This species of finch was heretofore unknown in literature from the Pacific side of Mexico.

Range.—Pacific watershed of central Mexico, in states of Morelos and Puebla.

Material examined.—*S. l. mexicana:* Morelos (Puente de Ixtla, 12); Puebla (Atlixco, 2). *S. l. chrysops:* Veracruz (Orizaba, 1); Chiapas (Palenque, 15).

ENTOMOLOGY.—*New genera and species of Neotropical bark beetles (Coleoptera: Scolytidae.)*[1]

M. W. Blackman, Bureau of Entomology and Plant Quarantine. (Communicated by C. F. W. Muesebeck.)

Described here are two new genera of Neotropical bark beetles, belonging to the subfamily Ipinae, tribe Pityophthorini, one of them containing two and the other three previously undescribed species. One of the genera is based upon material in the United States National Museum and recognized as new for a number of years, while the other is from material only recently received from Panama.

Gnatholeptus, n. gen.

Very similar to *Pityophthorus* Eichhoff in habitus and in many structural details. Body subcylindrical, weakly to moderately shining; frons flattened, finely, closely punctured with fine hairs in the female; eye large, emarginate, facets coarse; antenna similar to that of *Pityophthorus*, with club distinctly longer than 5-segmented funicle, ovate, with first two sutures strongly but incompletely septate; mandible long, slender, curved, extending well in front of rest of mouthparts, biting surface gougelike, comprising one-fourth or less of inner margin; pronotum margined at base, with anterior area concentrically asperate, summit rather low, with weak transverse impression; elytral declivity sloping, weakly to moderately sulcate at each side, third interspace with or without granules, vestiture moderate.

Genotype: *Gnatholeptus mandibularis*, n. sp.

This genus, although superficially similar to *Pityophthorus* and, indeed, much like certain of the species groups of that genus in many details such as antennal structure, can immediately be separated by the extraordinary development of the mandibles. In all known species of *Pityophthorus*, as well as in most of the Scolytidae, the mandibles are short and stout, with the biting or chewing surface comprising nearly all the inner margin. In *Gnatholeptus*, however, the mandibles are long, curved, and comparatively slender. As their bases are widely separated and as only the distal fourth to sixth meet to form the biting surface, they form a sort of arch through which the ventral mouthparts may be seen.

It would be interesting to know the feeding habits and mode of life of *Gnatholeptus* to see what advantage is gained by such unusual mandibles. All the specimens of this genus, however, were taken at light, and nothing is known of their food or habits.

Gnatholeptus mandibularis, n. sp.

Female.—Light reddish brown: 1.77 mm long, 3.10 times as long as wide.

Frons convex above, finely, sparsely punctured, shining, flattened between eyes below, feebly concave in median area, finely, densely punctured, with a dense brush of fine, yellow, plushlike pubescence of moderate length. Eye rather large, half divided by a deep, V-shaped emargination, facets rather coarse. Antenna similar to that of *Pityophthorus*, with club 1.44 times as long as 5-segmented funicle, 1.30 times as long as wide, widest through third segment; sutures arcuate, the first two strongly but incompletely septate. Mandible long, slender, with biting surface confined to only the distal fourth of the inner margin.

Pronotum 1.18 times as long as wide, widest on posterior half; posterior border margined, feebly arcuate, posterior angles scarcely rounded; sides straight and subparallel on posterior half, broadly rounded in front, anterior

[1] Received September 10, 1942.

margin with numerous low, very wide serrations; summit near middle, not high; anterior area with very broad, low asperities in nearly regular concentric rows; posterior area feebly, broadly impressed behind summit, finely, rather shallowly punctured, with interstices feebly shining, distinctly reticulate; median line narrow, weakly elevated, impunctate; vestiture of fine hairs on anterior area, disk subglabrous.

Elytra equal to pronotum in width and 1.64 times as long, 1.94 times as long as wide; sides nearly straight and subparallel on anterior three-fourths, rather broadly rounded at posterior angles, with extreme apex subacuminate owing to elevation of sutures; surface moderately shining; punctures moderately large, deep, in slightly irregular, rather crowded strial rows, only the first impressed; interspaces narrow, rugulose, nearly impunctate except at base and near declivity; disk and sides nearly glabrous. Declivity sloping, bisulcate; suture elevated throughout, more strongly at apex, with fine semierect hairs; first and second striae and intervening second interspace forming rather narrow, moderately deep sulcus, punctures much smaller than on disk, third interspace elevated, forming summit of lateral callosity, with a row of three small, rather pointed tubercles; interspaces finely punctured and with fine erect hairs.

Male unknown.

Type locality.—Barro Colorado Island, Panama.

Host.—Unknown.

Type material.—Holotype and 13 paratypes, U.S.N.M. no. 56418.

The type series was collected at light, June 20, 1941, by James Zetek.

Gnatholeptus panamensis, n. sp.

Rather light reddish brown (somewhat immature); 1.56 mm long, nearly exactly 3.0 times as long as wide; similar to *mandibularis*, n. sp., but with mandibles longer and each bearing a tuft of hairs, and elytral declivity without granules in third interspace.

Head retracted, concealing frons; epistomal margin in its median sixth extended to form a projection nearly three times as long as its basal width. Eye coarsely faceted, large, nearly half divided by a V-shaped emargination. Antenna similar in general to that of *mandibularis*. Mandible even longer and more slender than in *mandibularis*, its shaft in middle third bearing a tuft of very fine, stiff, yellow hairs, arising from its dorsal surface and extending distad; biting surface confined to distal sixth of its inner margin.

Pronotum 1.19 times as long as wide, widest near base; posterior border margined, feebly arcuate, posterior angles scarcely rounded; sides very feebly arcuate, broadly rounded in front, anterior margin with many very low, broad serrations (more numerous and less developed than in *mandibularis*); anterior area with concentric rows of very low, broad asperities, fused to form nearly entirely regular, concentric ridges; summit rather low, at middle; posterior area feebly, transversely impressed behind summit; surface feebly shining, faintly reticulate; punctures fine, shallow; median line narrow, scarcely elevated, impunctate; disk subglabrous, anterior area with fine, short hairs.

Elytra equal to pronotum in width and 1.65 times as long, 1.91 times as long as wide; sides subparallel on anterior two-thirds, narrowly rounded, not acuminate behind; surface rather weakly shining; punctures deep, moderate in size, in nearly entirely regular rows, only the first impressed; interspaces moderate, slightly wider than in *mandibularis*, finely rugulose, nearly impunctate on central disk, with a few very fine, short hairs. Declivity more sloping than in *mandibularis;* suture rather wide, about equally elevated throughout, with a few fine, erect hairs; first stria strongly impressed, punctures obsolete; second stria not impressed, the narrow sulcus formed largely by impression of first stria; third interspace without granules and not so strongly elevated as in *mandibularis;* interspaces with a few fine punctures bearing fine, semierect hairs.

The form described is believed to be a female. The other sex is unknown.

Type locality.—Barro Colorado Island, Panama.

Host.—Unknown.

Type material.—Holotype, U.S.N.M. no. 56419. The holotype was taken at light, June, 1941, by James Zetek.

Tachyderes, n. gen.

Body cylindrical with surface more or less shining; frons convex above, transversely im-

pressed between eyes; antenna with 5-segmented funicle, club notably longer, oval, compressed, with three arcuate sutures indicated by setal rows, none of them septate; eye of moderate size, inner line emarginate, facets fine to coarse; pronotum little if any longer than wide, margined at base and on sides behind, anterior area strongly, rather sparsely asperate, summit moderately elevated above the shining, finely punctured posterior area; elytra finely punctate-striate, subglabrous on disk; declivity arched, very feebly or not at all sulcate, vestiture scanty to abundant.

Genotype: *Tachyderes floridensis*, n. sp.

Tachyderes floridensis, n. sp.

Female.—Light reddish brown; 2.06–2.43 mm long, holotype 2.30 mm long, 2.60 times as long as wide.

Frons very wide between eyes; convex above, weakly concave between eyes; surface shining, finely granulate, with one or several large granules or small tubercles above concavity; hairs fine, rather short, inconspicuous except in profile. Eye moderately large, short oval, about one-third divided by a wide emargination; facets coarse. Antenna with club flattened, ovate, 1.29 times as long as wide, notably longer than funicle, with three subparallel, arcuate sutures indicated by setal rows, none of them septate.

Pronotum 1.11 times as wide as long, widest near base, posterior border indistinctly margined, nearly straight, posterior angles not rounded; sides feebly arcuate on posterior third, semicircularly rounded in front, without anterior lateral constriction; anterior margin with eight strong, coarse serrations, longer than wide (occasionally only seven are present); summit central in position and moderately high; anterior area steeply arched, with slightly irregular, concentric rows of coarse, moderately sparse, wide asperities; posterior area shining, broadly transversely impressed, with shallow, fine, indistinct punctures; median line impunctate, not elevated; vestiture fairly conspicuous on anterior area, very inconspicuous on disk.

Elytra equal to pronotum in width and 1.89 times as long, 1.71 times as long as wide; sides subparallel on anterior two-thirds, narrowly rounded behind; surface light reddish brown, moderately shining, reticulate; punctures moderately small, shallow, close, in nearly regular strial rows, the first rather weakly impressed; interspaces nearly impunctate on disk and sides, with very few, fine, short hairs. Declivity sloping, suture weakly elevated; first stria distinctly impressed, with punctures obsolescent; second stria slightly impressed, with intervening second interspace forming a very shallow, narrow sulcus: interspaces with a few very fine, shallow punctures, bearing moderately short, erect, spatulate bristles.

Male.—Much smaller, 1.51 mm long, 2.30 times as long as wide; frons convex above, transversely impressed below, more finely sculptured than in female; pronotum with marginal serrations reduced or partly obsolete; elytra with dorsal contour arcuate from base to apex, sculpture weak.

Type locality.—Paradise Key, Fla.

Additional localities.—Haiti, Virgin Islands, Mexico, Texas.

Host.—*Rhacoma crossopetalum* L.

Additional host.—*Hevea brasiliensis* Muell.

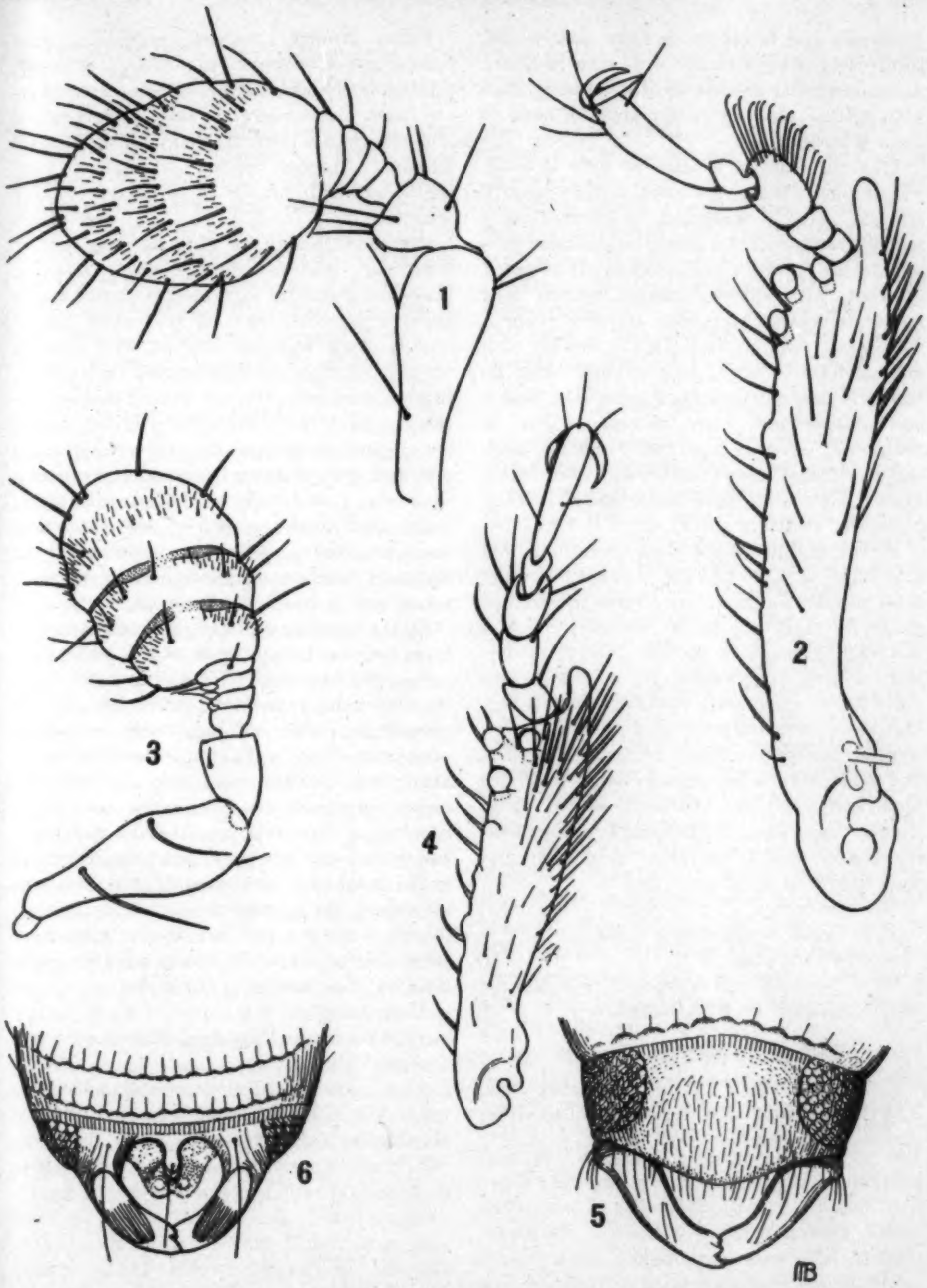
Type material.—Holotype, allotype, and 60 paratypes, U.S.N.M. no. 56415.

The holotype and 2 paratypes were taken March 9, 1919, on Paradise Key, Fla., by H. S. Barber; the allotype and 45 paratypes were reared from *Rhacoma crossopetalum*, Big Pine Key, Fla., by Barber and Schwarz; 1 paratype each from Biscayne and Key West, Fla., were collected by Hubbard and Schwarz; 1 paratype, Royal Palm, Fla., March 21, 1929, by W. S. Blatchley; 5 paratypes taken by W. H. Jenkins from *Hevea brasiliensis* at Bayeux, Haiti; 5 paratypes from Tampico, Mexico, by E. A. Schwarz; 1 paratype taken by Jones and Pratt at Brownsville, Tex., March 20, 1908; 1 paratype, St. Croix, Virgin Islands, H. A. Beatty, collector.

Tachyderes parvus, n. sp.

Female.—Reddish brown; 1.71 mm long, 2.61 times as long as wide; considerably smaller than *floridensis* and darker in color.

Frons very wide between eyes, feebly shining, convex above, somewhat flattened between eyes, strongly granulate-punctate, with granules coarser above and at sides, and nearly lacking below in median line, hairs sparse, fine, short and inconspicuous. Eye smaller than in



Figs. 1–6.—1, Antenna of female of *Tachyderes floridensis*, n. sp.; 2, fore tibia of *T. floridensis*, female; 3, antenna of *Gnatholeptus mandibularis*, n. sp.; 4, fore tibia of *G. mandibularis;* 5, frontal view of *G. mandibularis;* 6, frontal view of *G. panamensis*, n. sp. The drawings were made by Mrs. Mary F. Benson under the author's supervision.

floridensis and facets much finer, nearly one-third divided by a rather wide emargination. Antenna similar to that of other species, club with sutures not so strongly arcuate, none of them septate.

Pronotum almost exactly as wide as long, widest near base, posterior outline nearly straight, weakly margined, posterior angles scarcely rounded; sides nearly straight and subparallel on posterior half, moderately rounded in front, with anterior margin bearing nine moderately large serrations (smaller than in *floridensis*); summit very slightly behind middle, moderately high; anterior area with irregularly concentric rows of asperities, higher and sharper and more numerous than in *floridensis;* posterior area feebly shining, moderately, transversely impressed, with small, moderately shallow punctures; median line impunctate; vestiture scanty.

Elytra slightly wider than pronotum, and 1.69 times as long, 1.65 times as long as wide; sides subparallel on anterior three-fifths, then gradually narrowed, rather narrowly rounded behind; surface dark reddish brown, moderately shining, finely reticulate; punctures moderately fine, moderately shallow, in nearly regular strial rows, only the first row faintly impressed; interspaces nearly impunctate on disk and sides, with a few minute hairs. Declivity moderately sloping, first and second striae slightly impressed, the punctures obsolescent; interspaces with a few rather short hairs, not thickened as in *floridensis*.

Male unknown.

Type locality.—Cayamas, Cuba.

Host.—Unknown.

Type material.—Holotype, U.S.N.M. no. 56416, collected by E. A. Schwarz.

Tachyderes harringtoni, n. sp.

Female.—Reddish brown; 1.38 mm long, 2.55 times as long as wide; smaller than either *parvus* or *floridensis*.

Frons strongly convex, granulate, subopaque above, impressed in median area below, shining, finely punctured, with fine, inconspicuous hairs. Eye moderately small, facets rather fine, less than a third divided by a wide emargination. Antenna similar to that of *floridensis* but with sutures of club more weakly arcuate.

Pronotum nearly as wide as long, widest near base, posterior outline nearly straight, finely but distinctly margined, posterior angles scarcely rounded; sides feebly arcuate, nearly semicircularly rounded in front, with anterior margin bearing moderate-sized serrations; summit moderate, slightly behind middle; anterior area with rather sparse, broad, rather low asperities, irregularly, subconcentrically arranged; posterior area feebly shining, broadly, shallowly, transversely impressed, with small, rather indistinct punctures, the interstices finely reticulate; median line impunctate, not elevated; vestiture moderate on anterior area, scanty and inconspicuous on posterior area.

Elytra equal in width to pronotum and 1.70 times as long, 1.68 times as long as wide; sides subparallel on anterior two-thirds, moderately rounded behind; surface reddish brown, subopaque to feebly shining, finely reticulate; punctures of moderate size, rather shallow, in nearly regular strial rows, only the first stria feebly impressed on disk; interspaces finely rugulose, with a few fine, shallow punctures, and with a very few fine, short hairs. Declivity of the usual type for the genus, with first stria impressed, the punctures obsolete on first, reduced on other striae; interspaces with short, erect, cinereous, spatulate hairs more numerous than on other species of the genus.

Male unknown.

Type locality.—Yaguacua, Bolivia.

Host.—Unknown.

Type material.—Holotype and five paratypes, U.S.N.M. no. 56417, collected by G. L. Harrington in March, 1924.

ENTOMOLOGY.—*New species of syrphid flies in the National Museum.*[1] FRANK M. HULL, University of Mississippi (Communicated by ALAN STONE.)

This paper concludes a study of miscellaneous syrphid flies in the United States National Museum that was begun several years ago. Earlier reports upon this material have appeared in this JOURNAL. I wish to thank C. T. Greene and Dr. E. A. Chapin for many helpful courtesies and facilities in the study of these flies. The types are in the National Museum; paratypes where available are in the author's collection.

Mesogramma guttifera, n. sp.

Distinct in the pairs of oval spots upon the abdomen; the pattern suggests certain species of *Xanthandrus*.

Female.—Length 7 mm. *Head:* Vertex shining black; front for a trifle more than the median third shining blue-black, the sides bright yellow; frontal pile white, vertical pile black. Face and all but the posterior portion of cheeks pale yellow, white pilose, the former very short in profile; a very low tubercle lies at the point of greatest forward production. Antennae light brown, the third joint dark but reddish below at base. *Thorax:* Humeri, the lateral margins throughout, a complete marginal border upon the shining, brownish-black scutellum, the posterior half of the mesopleura and upper half of the sternopleura, all light yellow. Disk of mesonotum dull black with a broad, median vitta, which in some lights is light gray, in others bright steel-blue. There are on each side of this vitta three additional vittae, the middle one of which is much wider, suturally divided, and all three of which are margined at least narrowly with dark blue-black color. *Abdomen* narrowly oval, shining blackish marked with pairs of translucent, oval, yellow or light brown spots. First segment light yellow, black on posterior half. Second segment with a pair of oval yellowish spots, transverse, lying in the middle of each half of the segment, but broadly confluent with each other medially. Third segment, in the middle of each half, with a large subquadrate, but almost trapezoidal, slightly diagonal spot, the two well separated. Fourth segment with similar spots of almost the same size, their corners barely more rounded. Fifth segment with similar but smaller and much more rounded oval spots. *Legs* yellow; the hind femora with a wide, subapical black annulus, their tibiae dark brown at base and apex, narrowly yellow in the middle, their tarsi blackish; other tarsi brownish. *Wings* hyaline; stigma dark brown.

Holotype, female (U.S.N.M. no. 56421), Guatemala City, IV, 10 (J. M. Aldrich).

Baccha amabilis, n. sp.

Somewhat similar to *flavipennis* Wiedemann, with narrower abdomen and fewer linear vittae.

Male—Length 7 mm. *Head:* Vertex shining black. The front on upper third is opaque black viewed vertically, and at the eye margin at each lower angle of this triangle there is a small, punctate, white, hemispherical pubescent spot. The very swollen front is shining brown below, yellowish above the antennae. Face tuberculate, metallic black, with another white pubescent spot on each side at the upper eye margin. Antennae small, light brown, the third joint orange below; second joint nearly as long as third. *Thorax* very dark brown, with a pair of linear, widely separated, very obscure, gray or blue-black vittae; medially there is a pair of close, still more faint, brown-black vittae. Scutellum light brown, translucent, its pile and that of mesonotum erect, black, its basal fringe of five or six hairs pale. *Abdomen* moderately slender, parallel-sided from beyond the second segment, that segment constricted a little upon the basal half; color of abdomen light orange-brown, with darker vittae. Third to fifth segments with a pair of very narrowly separated (confluent upon the fifth segment) and narrow, medial vittae; these segments, on each side, with a pair of narrow, lateral vittae, each pair of which is confluent upon its posterior half, and whose outer section comprises the lateral margin itself. Second segment light brown with a small, rounded, yellowish, diffuse spot near the middle upon each side. Abdominal pile black, fairly long and abundant on the sides of the first segment. *Legs:* All the femora light yellow, except a wide subapical annulus upon the hinder pair; remainder of

[1] Received August 10, 1942.

first two pairs yellowish except the tarsi; their tarsi and remainder of hind legs blackish brown; all pile blackish; middle femora with a long fringe on the posterior surface. *Wings* light gray, very gradually becoming smoky brown on the basal third.

Holotype, male (U.S.N.M. no. 56422), Iquitos, Peru, March–April, 1931 (R. C. Shannon).

Baccha nepenthe, n. sp.

Related distantly to *conopida* Phillipi. This species is characterized by the very slender, light colored, basal petiole of the abdomen, the broadly expanded black terminal part, and the slight dip in the third vein.

Male.—Length 10 mm. *Head:* Front, face and cheeks, and antennae reddish brown, the third antennal joint somewhat darker above. *Thorax:* Mesothorax black except upon the pleura, humeri, wide lateral margins, scutellum and an extensive area in front of the scutellum, all of which are reddish brown. Pile everywhere extremely short, thick, and pale. There is a median gray-pollinose vitta; also there is a transverse vitta, similar though fainter on each side on the anterior margin of the suture. *Abdomen* very spatulate, the second segment long and cylindrical and together with the narrow lateral corners of the first segment and the greatly compressed base of the third segment light orange-brown. Remainder of the expanded, flattened abdomen black and black pilose. *Legs* light reddish brown. *Wings:* Anterior margin brownish to the end of the stigmal cell, this cell a little darker and the brown color expanded centrally. Third longitudinal vein slightly curved near the middle, the subapical cross vein very sigmoid.

Holotype, male (U.S.N.M. no. 56423), Bonita, Fla., 5-20-1932 (A. R. Taylor). Ex *Dactylopius tomentosus.* Also one male and one female paratype in U.S.N.M. One paratype in author's collection.

Baccha nymphaea, n. sp.

Related to *carlota* Curran; distinguished by the bicolored nonfasciate abdomen; lateral mesonotal margins continuously yellow almost to scutellum.

Female.—Length 11 mm. *Head:* Vertex and an annular ring before the antennae black. Front, face, and cheeks yellow, the first tending to brown. Antennae elongate, the first two joints yellowish brown, the third joint black, narrowly reddish below, the arista light brown. *Thorax:* Mesonotum light ochraceous-brown with four black vittae, the medial pair chiefly confluent along their medial margins and diverging posteriorly and evanescent some distance from the scutellum. Between the black vittae there is golden pubescence. Scutellum and all of pleura subtranslucent pale yellow. *Abdomen* subtranslucent yellow to a little before the middle of the third segment and throughout most of the sides of the third segment. Remainder of abdomen brownish black with black pile. *Legs* yellow, the bases of the tibiae whitish yellow, the hind tarsi more brownish above. Pile yellow except upon the hind trochanters and medial surface of their coxae. *Wings* with the stigmal cell and both sides of the third longitudinal vein to a point about the middle of the stigmal cell light brown. Third longitudinal vein rather arcuate, the subapical cross vein sigmoid.

Holotype, male (U.S.N.M. no. 56424), Campinas, São Paulo, Brazil (H. F. G. Sauer). One paratype, same data, in author's collection.

Baccha eruptova, n. sp.

Related to *peruviana* Shannon but differing in the abdominal proportions and pattern.

Female.—Length 15 mm (abdomen 10 mm); wing 10.5 mm. *Head:* Vertex shining black with a bluish tinge. Upper half of the front, except narrowly along the sides, opaque black, lower half strongly shining blue-black; narrow sides of front for two-thirds of its height, linearly white pubescent and this pubescence discontinuous with that on the sides of the face. Frontal and upper facial pile black. Face tuberculate, metallic black, the sides yellowish and white pubescent; cheeks black. Antennae black, of normal shape, the inner end of second joint a little produced. *Thorax* brown-black, obscurely shining, with a pair of slender, widely separated, very obscure, dark brown pollinose vittae. Scutellum dark brown, shining, its pile and that of mesonotum black and short; its fringe in part black, rather long, of thirty or more bristles. Squamae and fringe dark brown. *Abdomen* elongate, the second and sixth segments of about equal length, the former as wide apically

as the latter at base; third to fifth segments of slightly decreasing length, the third four-fifths as long as second, and about twice as wide at its apex as at the narrowest width of the second segment; last segment cylindrical at base and strongly compressed laterally at apex. Color of abdomen shining blackish to dark mahogany, the basal corners of the second and third segments light mahogany, and on the second this color extends two-thirds of the length of the segment along its sides. There is a narrow-pronged, opaque triangle (black in oblique view) in the middle of the second segment, and a wider shorter one upon the third segment. Abdominal pile black, abundant and rather long on the sides of the first segment. *Legs* dark brown, the hinder pair black as far as the middle of the basitarsal joint, yellowish white and similarly pilose upon the terminal portion; elsewhere the legs are black pilose. *Wings* brown on the basal two-fifths as far as anterior cross vein.

Holotype, female (U.S.N.M. no. 56425), Iquitos, Peru, March–April 1931 (R. C. Shannon).

Volucella brunnigaster, n. sp.

Somewhat similar in general appearance to *mellea* Jaen., but distinguished by the scutellar depression and numerous other differences.

Male.—Length 12 mm. *Head:* Front, face, and cheeks reddish orange-brown, rather deep, the low tubercle with long black pile. The sides of the face with reddish-golden pubescence, a few similar hairs and a few long hairs above. Antennae orange-brown, the third joint twice as long as basal width, the arista with 15 dorsal rays. *Thorax* shining black with a golden cast, the sides dark brown, the bristles black, the pile thick, short, yellowish, among which are numerous very long and slender black hairs; no prescutellar bristles. Scutellum brown with rugose transverse depression and six pairs of black marginal bristles. Scutellar pile, except in the corners, black. *Abdomen* translucent, orange-brown, with some black upon the first two segments. The first segment, except the sides, and a medial, narrow and posteriorly attenuated vitta on the second segment black. Pile of abdomen widely black upon the posterior half of the third and fourth segments and narrowly toward the sides on the posterior margin of the second segment, otherwise golden. *Legs* black. The apices of the femora, the wide base of all the tibiae, and their apices narrowly reddish brown. Tarsi brown, becoming blackish upon their distal joints. *Wings:* Veins margined with brown, the central cross veins a little darker and an obscure spot at the end of the subcosta. Marginal cell very widely opened.

Holotype, male (U.S.N.M. no. 51351), Meta District, Colombia, B. Guevara collector, 1932. One paratype, same data, in author's collection.

Volucella viridigaster, n. sp.

Related to *verdigaster*, n. sp., but with less extensive vittae and fascia upon the abdomen and the wing veins not conspicuously margined.

Male.—Length 11 mm. *Head:* Front, face, and cheeks pale whitish yellow. There is a pale, diffuse, brownish vitta separating face and cheeks and one down the middle of the deep-conical face. The low tubercle is densely short black pilose, the front longer black pilose, the sides of the face white pilose and pubescent. Antennae orange, the third joint two and one-half times as long as the basal width. *Thorax:* Mesonotum black, the sides light brownish yellow, the bristles black, the scutellum subtranslucent brownish yellow with five pairs of black bristles, a shallow preapical depression and black pile. Pile of thorax chiefly black with considerable whitish pile anteriorly. There are no prescutellar bristles. Squamae light yellow with brown fringe. *Abdomen* pale green translucent: the middle of the first segment, a narrow medial expanding vitta on the second segment black and confluent with a linear, black posterior border; the black border evanescent laterally; a similar evanescent black border on the third segment. Pile of abdomen black, short, dense, and appressed except over the basal portion of each segment. *Legs* black, the apices of the femora, the bases of the tibiae and the basal tarsal joints dark brown. *Wings* pale brown, cross veins clouded, the marginal cell widely opened.

Holotype, male (U.S.N.M. no. 51350), Ecuador, F. Campos R. A paratype, same data, in author's collection.

Volucella verdigaster, n. sp.

Related to *inconsistens* Curran, but with wide black median vittae on the abdomen as well as fasciae.

Male.—Length 12 mm. *Head:* Middle of front black, the sides of front and face pale yellow. The cheeks and broad middle of the face black. Face deep conical, the pile thick over the tubercle and chiefly black with some shorter pile mixed with longer black hair on the sides. Antennae dark brown, the third joint twice as long as basal width, the arista with 27 dorsal rays. *Thorax:* Mesonotum black with a bluish and violaceous tinge, the humeri, a presutural and prenotopleural, besides a pair of prescutellar spots and a pair of elongate spots almost adjacent to the postcalli, all light yellow. Thoracic bristles and pile black except for some short white pile upon the yellow spots and in the midline anteriorly. No prescutellar bristles. Scutellum dark brown with transverse rugose depressions and five pairs of long black bristles. *Abdomen* black with large, subrectangular, apple-green translucent spots in the lateral corners of the second segment, and more irregular spots in the lateral corners of the third and fourth which extend posteriorly to cover the entire lateral margin. Pile very dense, rather long, nearly erect, and black except upon the pale areas, where it is whitish. *Legs* black and black pilose. *Wings* hyaline, strongly clouded with brown along all of the cross veins and the distal portions of the second, third and fourth longitudinal veins; marginal cell widely opened.

Holotype, male (U.S.N.M. no. 51354), and one paratype, Bogotá, Colombia, B. Guevara collector, in U. S. National Museum; one paratype, same data, in author's collection.

Volucella flavogaster, n. sp.

This species suggests *zonaria* Linnaeus, of Europe. It is characterized by the linear black fascia of the abdomen and other markings.

Male.—Length 14 mm. *Head:* Entire face except for a pale, diffuse vitta separating face and cheeks bright yellow, golden pilose. The eyes of the male instead of being holoptic are merely approximated. Antennae orange, the third joint short, one and one-half times as long as basal width, the dorsal margin concave. The long arista has 26 dorsal rays. Ocellar pile orange. *Thorax:* Mesonotum orange-brown with a sublateral black vitta broken at the suture, and on the posterior area of the dorsum a pair of submedial anterolaterally attenuated blackish spots. There are 9 or 10 prominent, black, prescutellar bristles, and all the lateral bristles are black. Scutellum orange-brown, swollen, with four pairs of black bristles. Squamae and fringe yellow. *Abdomen* orange-yellow marked with black as follows: Whole of the first segment, a basal fascia on the second expanded in the middle into a vitta that connects with a very narrow line at posterior margin; laterally this posterior marginal line is confluent with a transverse, narrow fascia occupying the lateral fourth of the segment just beyond the middle. Third segment with a narrow, basally attenuated, medial black vitta, a still narrower, posterior, black marginal marking, which is confined to the margin and not connected with the narrower transverse fascia. Fourth segment similar except that the marking along posterior margin is absent and the transverse fascia now occupies the middle of the long convex segment. *Legs* light yellow, the femora somewhat more brownish, their pile blackish on the lateral surfaces; elsewhere the pile is golden. *Wings* strongly tinged with yellow, the posterior margin pale brown, the marginal cell closed and stalked, it and the cell behind it light brown.

Holotype, female (U.S.N.M. no. 51356), Chinkiang, China, May 1923. A paratype, same data, in author's collection; also two paratypes from Nanking, China, one in the Vienna Museum, one in author's collection.

This is a very pretty species, and I have not been able to identify it with any Asiatic species known to me.

Graptomyza globigaster, n. sp.

This species suggests *flavorhyncha* Hull in the pattern of its abdomen; the fasciae are not medially expanded, however, and the face is short.

Female.—Length 6 mm. *Head:* Front, face, and cheeks pale yellow, marked with black; a narrow medial black stripe on the front and brownish down the middle of the face, darker between face and cheeks. Four or five blackish hairs on the tubercle and a few shorter ones below. Antennae elongate, orange, the third joint grayish above and three and one-half times as long as wide. The arista is nonplumose. *Thorax:* Mesonotum broadly black, the humeri, propleura, most of the mesopleura pos-

teriorly, the wide lateral margins of the mesonotum and the area before the scutellum, all pale yellow. Scutellum dark brown, blackish over the broad central concavity. Thoracic and scutellar bristles black, the short pile yellow. *Abdomen* oval-globose, subtranslucent, orange-brown marked with black as follows: a black fascia lying on the posterior portion of the second segment attenuated medially and medially indented behind and withdrawn from the margin; this fascia is continuous with an abruptly diagonal and slender, sublateral black vitta on each side of the third segment, which extends to the posterior corner and leaves the anterior corner pale. The posterior portion of the third segment is marked with a similar diverging black fascia, which, however, is broadly interrupted medially but also attenuated; laterally it connects narrowly with a wider and similar sublateral vitta. Fourth segment with a long, median vitta and a pair of sublateral, shorter, more posterior black vittae; these black vittae are wide and anteriorly rounded and none of them reaches the basal margin. *Legs* pale yellow, the apical fourth of the hind femora and all of hind tibiae black and chiefly black pilose, elsewhere the pile is pale. *Wings* hyaline with a pair of pale, slightly oblique, brownish fasciae beginning at the ends of the first and second longitudinal veins. The first of these bands reaches the base of the lower cross vein, the second reaches and follows the subapical cross vein. There is a small brown spot at the end of the subcostal vein.

Holotype, female (U.S.N.M. no. 52904), and 2 paratype females in U. S. National Museum, Island of Biliran, Philippines, C. F. Baker, collector. Paratype, same data, in author's collection.

Brachypalpus trilineata, n. sp.

Differing from any described species in the narrow, pale fascia of the abdomen.

Female—Length 14 mm. *Head:* Front and vertex shining black, the sides of the former narrowly yellow pubescent, all pile except a few black hairs at ocelli and above the antennae, yellowish. The prominent face is bare, dull and very dark mahogany, the cheeks shining black. Face with a very large, low, long tubercle, and a quite wide, thickly golden pubescent stripe reaching from eye to epistoma and continued broadly up the sides of the face to unite below the antennae. Antennae short, black, the third joint almost circular in outline. *Thorax* rather light brownish pollinose with rather obscure, broad vittae. Pleura thickly covered with ochre-colored pollen. The abundant pile of pleura and mesonotum is ochraceous, except for a few long, erect, black hairs on the posterior third of the mesonotum. Scutellum shining black, long, yellow-pilose, with a copious ventral fringe. *Abdomen* very broad and flat, with nearly parallel sides, a little wider in the middle of the abdomen. Abdomen dully shining black, marked with yellow to brown fascia. First segment light brownish basally. Second segment with a transverse, yellow-brown, basomedially indented, parallel-sided fascia near the middle running almost to the lateral margin. Third and fourth segments each with a subbasal, narrower, parallel-sided, light-yellow and yellow-pollinose fascia reaching the lateral margin; the fascia upon the fourth segment is slightly arcuate, especially toward the sides. Abdominal pile rather short, appressed and black except upon the first segment and the sides of the base of the second segment. *Legs:* Femora black; all the tibiae and tarsi except their distal joints, light orange. *Wings* light brown, the stigmal cell no darker, the stigmal cross vein heavy. The small cross vein is located four-fifths of the length of the discal cell from its base.

Holotype, female (U.S.N.M. no. 56426), Tjibodas, Mount Gede, Java, 4.09, Bryant and Palmer, collectors.

ZOOLOGY.—*North American monogenetic trematodes: VI. The family Diclidophoridae (Diclidophoroidea).*[1]

EMMETT W. PRICE, Bureau of Animal Industry.

As in previous sections of the series, this paper deals with flatworms that live as external parasites on cold-blooded vertebrates. The members of the family Diclidophoridae are for the most part parasites of marine fishes, living on the gills and occasionally in the mouth. The organization and purpose of this paper are the same as for previous installments (Price, 1937, 1938, 1939a, 1939b, 1942).

DICLIDOPHOROIDEA Price, 1936

Diagnosis.—Anterior haptor in form of two lateral, oval or circular suckers opening into the oral cavity. Posterior haptor variable in shape and position, usually at the posterior end of body, sometimes ventral or lateral, usually provided with two rows of suckers or clamplike adhesive organs having a complicated, heavily cuticularized, riblike, supporting structure; posterior tip of haptor often terminating in a tonguelike structure or "languette" frequently armed with one to three pairs of hooks. Digestive system consisting of a prepharynx serving as an oral cavity, a bulbous pharynx, a short esophagus, and an intestine consisting, except in *Diplozoon*, of two principal branches provided with numerous median and lateral diverticula. Eyes absent. Male and female genital apertures usually opening to exterior through a common pore situated ventrally. Cirrus armed or unarmed. Testes usually numerous, postovarial, occasionally preovarial. Ovary elongate, folded. Vaginae present or absent, usually opening dorsally. Parasites of fishes, or of crustaceans parasitic on fishes.

Type family.—Diclidophoridae Fuhrmann, 1928.

KEY TO FAMILIES OF DICLIDOPHOROIDEA[2]

1. Framework of haptoral suckers consisting of 8 principal pieces (Fig. 1, A).....DICLIDOPHORIDAE Fuhrmann
   Framework of haptoral suckers consisting of fewer than 8 principal pieces.....2
2. Framework of haptoral suckers consisting of 3 pieces (Fig. 1, F)...HEXOSTOMATIDAE Price
   Framework of haptoral suckers consisting of more than 3 pieces.....3
3. Haptoral suckers relatively strongly muscular (Fig. 1, B); vagina double (absent in *Octomacrum*), openings lateral.....DISCOCOTYLIDAE Price
   Haptoral suckers relatively weakly muscular; vagina when present, usually single and opening dorsally:.....4
4. Haptoral suckers usually numerous, framework as shown in Fig. 1, C.....MICROCOTYLIDAE Taschenberg
   Haptoral suckers variable in number, framework not as above.....5
5. Haptoral suckers usually numerous, framework as in Fig. 1, D....GASTROCOTYLIDAE, n. f.
   Haptoral suckers few in number, framework as in Fig. 1, E.....MAZOCRAEIDAE Price

Family **Diclidophoridae** Fuhrmann, 1928

Synonym.—Choricotylidae Rees and Llewellyn, 1941.

Diagnosis.—Haptor terminal, usually bearing four pairs of cuplike adhesive structures having a complicated, heavily cuticularized framework of the general type as shown in Fig. 1,A. Cirrus usually armed with a circle of curved hooks, which are crescentic in cross section.[3] Seminal receptacle usually, if not always, present. Vaginae usually absent.

Type genus.—*Diclidophora* Diesing, 1850.

KEY TO SUBFAMILIES OF DICLIDOPHORIDAE

Haptoral sucker clamplike or pincerlike.....DICLIDOPHORINAE Cerfontaine
Haptoral suckers cuplike.....CYCLOCOTYLINAE, n. subf.

Subfamily **Diclidophorinae** Cerfontaine, 1895

Diagnosis.—Haptor with four pairs of pedunculated clamplike suckers of the type shown in Fig. 1, A. Cirrus armed. Vaginae absent.

Type genus.—*Diclidophora* Diesing, 1850.

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[1] Received September 7, 1942.

[2] No entirely satisfactory key can at present be formulated to distinguish the families of Diclidophoroidea. The principal group characters are in the number and shape of the pieces composing the framework of the haptoral suckers; so far no descriptive terms have been proposed for these structures that will impart a sufficiently clear picture of their appearance.

[3] The hooks of the genital coronet are crescentic in cross section and this frequently gives them the appearance of being "double pointed."

KEY TO GENERA OF DICLIDOPHORINAE

1. Haptor distinctly set off from body proper. . . . . *Diclidophoroides*, n. gen.
   Haptor not distinctly set off from body proper 2
2. Testes postovarial. . . . . *Octodactylus* Dalyell
   Testes preovarial and postovarial. . . . . *Diclidophora* Diesing

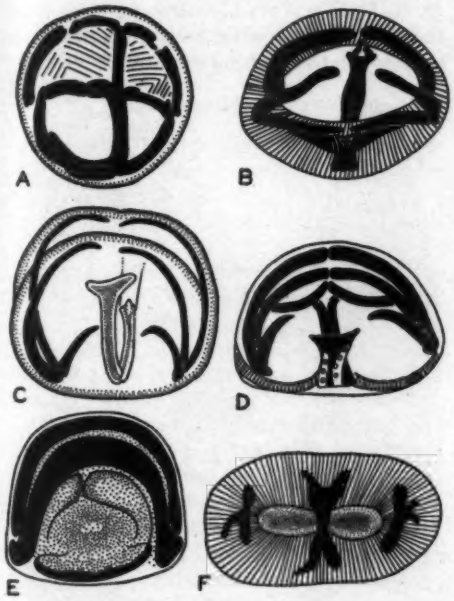


Fig. 1.—Types of haptoral suckers in the superfamily Diclidophoroidea: A, Diclidophoridae; B, Discocotylidae; C, Microcotylidae; D, Gastrocotylidae; E, Mazocraeidae; F, Hexostomatidae.

Genus **Diclidophora** Diesing, 1850

Synonyms.—*Dactycotyle* Beneden and Hesse, 1863; *Dactylocotyle* Marschall, 1873.

Diagnosis.—Haptor not set off from body proper, bearing four pairs of pedunculated, clamplike suckers. Testes numerous, preovarial and postovarial. Eggs with polar prolongations.

Type species.—*Diclidophora longicollis* Diesing, 1850 [= *D. merlangi* (Kuhn, in Nordmann, 1832)].

The genus *Diclidophora* was proposed by Diesing (1850) for two species, *D. longicollis* Diesing and *D. palmata* (F. S. Leuckart), the former being *Octostoma merlangi* Kuhn (in Nordmann, 1832) renamed. Both of these species were regarded by Cerfontaine (1895) as congeneric with *Dactycotyle pollachii* Beneden and Hesse, 1863, the type (subsequent designation by Stiles and Hassall, 1908) of *Dactycotyle* Beneden and Hesse, 1863 (= *Dactylocotyle* Marschall, 1873). Of the two species originally included in the genus *Diclidophora*, *D. palmata* (F. S. Leuckart) is apparently identical with *Octodactylus inhaerens* Dalyell (1853). Since the original species of *Diclidophora*, as well as several species subsequently added to the genus, are clearly divided into two groups on the basis of testicular distribution, it appears desirable to recognize both *Diclidophora* Diesing and *Octodactylus* Dalyell as valid genera. *Diclidophora merlangi* (Kuhn) of MacCallum, 1917, having characters of the subfamily but not being congeneric with either *Diclidophora* or *Octodactylus*, is placed in the new genus *Diclidophoroides*.

The species comprising the genus *Diclidophora* (*s. str.*)[4] are *D. merlangi* (Kuhn, in Nordmann, 1832),[5] from *Gadus merlangus* in Europe; *D. denticulata* (Olsson, 1876), n. comb., from *Pollachius virens*; *D. luscae* (Beneden and Hesse, 1863), n. comb., from *Morrhua lusca;* and *D. pollachii* (Beneden and Hesse, 1863), n. comb., from *Pollachius pollachius*.

[4] *Dactylocotyle minor* Ishii (1936) renamed *D. thunni* Ishii, in Ishii and Sawada (1938), does not belong to the genus *Dactylocotyle* (= *Diclidophora*) but is a species of *Mazocraes*.

[5] Dollfus (1922) has raised the question as to the authorship of the name *merlangi*, which was credited to Kuhn by Nordmann (1832), and prefers to regard Nordmann as the author since the name credited to Kuhn was only a manuscript name. In spite of the fact that the name *"Octostoma merlangi* Kuhn" is a manuscript or label name, which probably accompanied specimens that were sent by Kuhn to Rudolphi and later studied by Nordmann, the following are reasons for recognizing Kuhn as the author: Nordmann placed the name *"Octostoma merlangi* Kuhn" as a synonym of *"Octobothrium*(?) *merlangi"* (= *Diclidophora merlangi*), thereby crediting Kuhn with the name of the species. Opinion 4 of the International Rules of Zoological Nomenclature states that "Manuscript names acquire standing in nomenclature when printed in accordance with the provisions of Art. 25, and the question as to their validity is not influenced by the fact whether such names are accepted or rejected by the author responsible for their publication." The name in question was used for the species now known as *Diclidophora merlangi* and the conditions under which it was used conform to those stipulated under Art. 25; therefore, there seems to be no question as to the validity of the name, and the authorship of the species should, accordingly, be credited to Kuhn, in Nordmann, 1832.

Diclidophora denticulata (Olsson, 1876), n. comb.
Figs. 2–3

Synonyms.—*Octobothrium denticulatum* Olsson, 1876; *Dactylocotyle denticulatum* (Olsson, 1876) Cerfontaine, 1895; *D. carbonarii* Cerfontaine, 1895.

Description.—Body 7 mm long by 1.6 mm wide at level of ovary, tapering gradually anteriorly. Anterior haptors in form of a pair of suckers, each about 170μ in diameter, opening into oral cavity. Posterior haptor more or less rectangular, about 2.1 mm long, not set off from body proper, bearing four pairs of pedunculated clamplike suckers; no terminal hooks. Suckers about equal in size, 680μ wide, supported by complicated cuticular structure (Fig. 3); wall of suckers muscular; outer anterior quadrant of suckers armed with 30 to 40 lancelike spines. Oral aperture subterminal; pharynx oval, 187μ long by 153μ wide; remainder of digestive tract not observable in available material. Male genital aperture median, about 595μ from anterior end of body; cirrus about 95μ in diameter, armed with 13 inwardly curved hooks. Testes numerous, small, extending from about one-third of total body length from anterior end to about level of anterior end of haptor. Ovary N-shaped, median, about 400μ in front of anterior limit of haptor. Vitelline follicles abundant, extending from level of female genital pore to posterior end of haptor. Seminal receptacle and vitelline reservoir preovarial. Genito-intestinal canal not observed. Uterus long and slender, in median field. Female genital aperture median, about 190μ posterior to male genital aperture. No fully formed eggs present in available specimen.

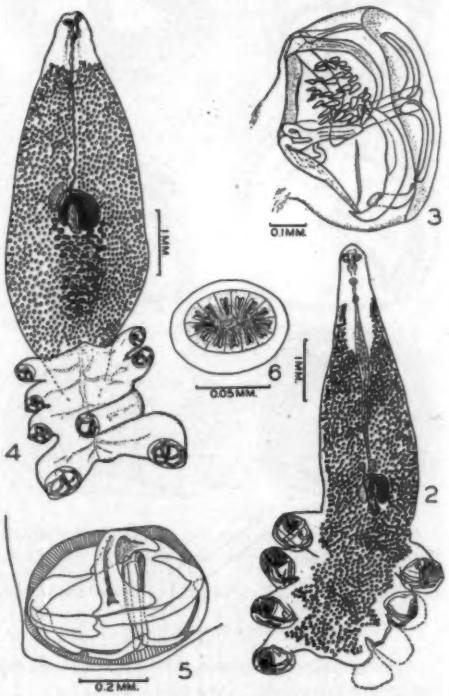
Host.—*Pollachius virens* (Linnaeus).

Location.—Gills.

Distribution.—United States (Woods Hole, Mass.) and Canada (St. Mary Bay, Nova Scotia).

Specimen.—U.S.N.M. Helm. Coll. no. 6508.

This species was originally described by Olsson (1876) from specimens collected from *Gadus virens* (= *Pollachius virens*) from the Skaggerak, and, later, Cerfontaine (1895) gave a detailed description of the parasite. In North America there appear to be three records of its occurrence: Linton (1900) reported the finding of one specimen by Prof. H. M. Kelly at Woods Hole, Mass., and Stafford (1904) and Cooper (1915) reported this species from Canada. The specimen reported by Linton is the one on which the above description is based. This specimen, a toto mount, was in fair condition despite the fact that two of the clamplike suckers of the haptor had been torn off. *D. denticulata* is readily distinguishable from the other members of the genus by the presence of spines on the haptoral suckers.



Figs. 2–3.—*Diclidophora denticulata:* 2, Complete worm, ventral view; 3, clamplike haptoral sucker. Figs. 4–6.—*Diclidophoroides maccallumi:* 4, Complete worm, ventral view; 5, clamplike haptoral sucker; 6, cirrus.

Genus **Octodactylus** Dalyell, 1853

Synonym.—*Pterocotyle* Beneden and Hesse, 1863.

Diagnosis.—Haptor not distinctly set off from body proper. Testes confined to postovarial portion of body. Eggs usually without polar prolongations.

Type species.—*Octodactylus inhaerens* Dalyell, 1853 [= *O. palmata* (F. S. Leuckart, 1830), n. comb.].

This genus contains *Octodactylus palmata* (F. S. Leuckart, 1830)[6] (syns. *O. inhaerens* Dalyell, 1853; *Octobothrium digitatum* Rathke, 1843; *Dactylocotyle mòlvae* Cerfontaine, 1895), from *Molva molva; O. minus* (Olsson, 1876), n. comb., from *Gadus poutasson;* and *O. morrhuae* (Beneden and Hesse, 1863),[7] n. comb., from *Gadus morrhua.* As none of these species occurs on North American hosts, the genus will not be considered further.

Diclidophoroides, n. gen.

Diagnosis.—Haptor distinctly set off from body proper. Testes postovarial. Otherwise similar to *Octodactylus.*

Type species.—Diclidophoroides maccallumi, n. sp.

In addition to the type species, it is possible that *Dactylocotyle phycidis* Parona and Perugia, 1889, from *Phycis blennoides* in Europe may belong here. The description of *D. phycidis,* however, is too inadequate for definite generic allocation. *Heterobothrium ecuadori* Meserve (1938) from *Cheilichthys annulatus* and *H. galapagensis* Meserve (1938) from *Paranthias furcifer,* both from the Galapagos Islands, are tentatively included in *Diclidophoroides,* the new combinations being *D. ecuadori* (Meserve) and *D. galapagensis* (Meserve), respectively. The pincerlike or clamplike nature of the haptoral suckers definitely eliminates these two species from the genus *Heterobothrium.* Only the type specimens of Meserve's species were available for examination, but these show the haptors to be fairly well set off from the body proper, although not so distinctly so as in *D. maccallumi;* the haptoral suckers are subsessile and equal in size.

Diclidophoroides maccallumi, n. sp.

Figs. 4–6

Synonyms.—Diclidophora merlangi MacCallum, 1917; *Dactylocotyle minor* (Olsson, 1876) of Manter, 1926; *D. phycidis* Parona and Perugia, 1889, of Stafford, 1904; *Choricotyle merlangi* (MacCallum, 1917) Llewellyn, 1941.

Description.—Body elliptical, 4.2 to 6.9 mm long by 1.5 to 2.1 mm wide. Anterior haptor in form of a pair of suckers, each 76 to 115μ wide, opening into oral cavity. Posterior haptor somewhat rectangular, 1.8 mm long by 2.3 mm wide in largest specimen, distinctly set off from body proper, bearing four pairs of pedunculated clamplike suckers, peduncles and suckers of different sizes, first pair smallest and posterior pair largest, with complicated cuticular supporting structure (Fig. 5); smallest suckers 170 to 255μ wide, largest 425 to 510μ wide. Posterior tip of haptor armed with 2 pairs of minute hooks. Oral aperture subterminal; pharynx oval, 157 to 170μ long by 70 to 114μ wide; remainder of digestive tract not traceable except in haptor, here branches observed to enter peduncles of suckers. Genital aperture median, 247 to 340μ from anterior end of body. Cirrus muscular, 38 to 95μ in diameter, armed with a circle of 13 to 16 inwardly curved hooks. Testes relatively numerous, small, in median field posterior to ovary; a few testes sometimes lateral to ovary. Ovary elongate, N-shaped, median, equatorial. Vitelline follicles abundant, extending from a short distance back of genital aperture to posterior end of body proper. Seminal receptacle anterior to, and to right of, ovary; vagina and genito-intestinal canal not observed. Uterus slender, in median field. No eggs present in available specimens (eggs non-filamented, according to Manter, 1926).

Host.— Urophycis chuss (Walbaum).

Location.—Gills.

Distribution.—United States (Woods Hole, Mass., and Mount Desert Island, Maine) and Canada.

Specimens.—U.S.N.M. Helm. Coll. nos. 35106 (type and paratypes), 35585, and 35586.

Diclidophoroides maccallumi appears to be the same species as that described by Manter (1926) as *Dactylocotyle minor* (Olsson) from *Urophycis chuss,* and as that reported by Stafford (1904) under the name *D. phycidis* Parona and Perugia from the same host in Canada. That *Diclidophoroides maccallumi* is distinct from the form described by Olsson (1868) as *Octobothrium palmatum* Leuck. f. *minor* seems clear, since the haptor in Olsson's form shows the pedunculated suckers to be

[6] MacCallum (1917) reported finding on the gills of *Lota maculosa* "a rather delapidated specimen of what seems to answer to the description of *D. palmata.*" This specimen has been examined and found not to be a trematode, consequently the report of this species from North America is erroneous.

[7] The form reported by Scott (1901) from *Gadus callarius* (=*G. morrhua*) under the name of *Pterocotyle morrhuae* is probably not this species.

equal in size and not unequal as is the case in the specimens described by Manter, or in the specimens collected by MacCallum.

MacCallum thought that this species might be identical with *Dactylocotyle merlangi* (Kuhn), but Dollfus (1922) has pointed out that the two species are not identical and that the name *merlangi* MacCallum should be retained for the species described by MacCallum (1917), since *merlangi* (Kuhn, of authors) belongs in the genus *Dactylocotyle* (= *Diclidophora*). Unfortunately Dollfus's proposal, which is concurred in by Llewellyn (1941), is untenable, as *merlangi* (Kuhn) was placed in the genus *Diclidophora* by Krøyer (1838–40, p. 606) and also by MacCallum (1917); consequently *Diclidophora merlangi* MacCallum is a homonym and must be renamed.

Diclidophora spp.

Linton (1905) reported *Dactylocotyle* sp. from the gills of *Brevoortia tyrannus* and *Diclidophora* sp. from the gills of *Orthopristis chrysopterus*. The first of these forms was illustrated but not described and the second was described briefly as follows: "This specimen is very fragile, the posterior finger-like processes appearing to be somewhat macerated. Dimensions, in millimeters; length 1.68, length exclusive of posterior sucker 1.28; diameter at anterior end 0.08: maximum diameter of body 0.52, of sucker region 0.96; diameter of one of the 8 small suckers 0.13."

The illustration of the form from *Brevoortia tyrannus* indicates that it is probably a new species and may not belong to the genus *Diclidophora*, but the details were not clearly brought out and as no description was given, it seems inadvisable to name it. The description of the form from *Orthopristis chrysopterus* is too inadequate to warrant further consideration.

Cyclocotylinae, n. subf.

Synonym.—Diclidophorinae Cerfontaine, 1895 in part.

Diagnosis.—Haptor with four pairs of sessile, subsessile, or pedunculated cuplike suckers, each provided with a heavily cuticularized framework of the type shown in Fig. 1,A. Cirrus armed (except in *Cyclocotyloides*) with hooks as in Diclidophorinae. Vaginae usually absent.

Type genus.—*Cyclocotyla* Otto, 1823.

KEY TO GENERA OF CYCLOCOTYLINAE

1. Cirrus hooks absent....*Cyclocotyloides*, n. gen.
   Cirrus hooks present....2
2. Vaginae present....*Diclidophoropsis* Gallien
   Vaginae absent....3
3. Framework of anterior pair of haptoral suckers orientated inversely as compared with those of posterior 3 pairs....*Heterobothrium* Cerfontaine
   Framework of all 4 pairs of haptoral suckers occupying same relative orientation....4
4. Testes both pre- and postovarial....*Cyclobothrium* Cerfontaine
   Testes entirely postovarial....5
5. Posterior pair of suckers sessile and widely removed from anterior 3 pairs of pedunculated suckers....*Pedocotyle* MacCallum
   Posterior pair of suckers either subsessile or pedunculated and not separated from other pairs....6
6. Vitellaria extending into haptor....*Cyclocotyla* Otto
   Vitellaria not extending into haptor....*Neoheterobothrium*, n. gen.

Genus **Cyclocotyla** Otto, 1823

Synonyms.—*Octostoma* Otto, 1823, not Kuhn, 1829; *Cyclostoma* Otto, 1823, not Lamarck, 1799; *Cyclobothrium* Cerfontaine, 1895, in part; *Choricotyle* Beneden and Hesse, 1863; *Diclidophora* Diesing, of Goto, 1894, in part; *Mesocotyle* Parona and Perugia, 1889.

Diagnosis.—Haptor distinctly set off from body proper; suckers either subsessile or pedunculated, more or less equally spaced. Genital atrium non-muscular; cirrus armed; testes postovarial. Vaginae absent; vitellaria extending into haptor.

Type species.—*Cyclocotyla bellones* Otto, 1823.

This genus was proposed by Otto (1823) for a parasite collected from the "Rucken-Haut eines Hornhechts" at Naples. The description of the species is limited to external characters, but the figure shows it to be closely related to, and possibly the same as, *Cyclobothrium charcoti*, which was described by Dollfus (1922a; 1922b) from a crustacean parasitic on the skin and in the mouth of *Trachurus trachurus* and *Box boops*. A comparison of the essential characters of these forms with those of the type and other species at present included in the genus *Choricotyle* Beneden and Hesse (1863) shows them to be sufficiently similar as to be regarded as congeneric.

As present constituted the genus *Cyclocotyla* contains the following species: *Cyclocotyla bellones* Otto, 1823, from "Hornhecht," *C. charcoti* (Dollfus, 1922), n. comb., from *Cymothoa* (*Meinertia*) *oestroïdes* parasitic on *Trachurus trachurus* and *Box boops; C. chrysophryi* (Beneden and Hesse, 1863), n. comb., from *Chrysophrys aurata* and *Pagellus centrodontus; C. caulolatili* (Meserve, 1938), n. comb., from *Caulolatilus princeps; C. elongata* (Goto, 1894), n. comb., from *Pagrus tumifrons; C. labracis* (Cerfontaine, 1895), n. comb., from *Labrax lupus; C. neomaenis* (MacCallum, 1917), n. comb., from *Lutianus analis; C. pagelli* (Gallien, 1937), n. comb., from *Pagellus centrodontus; C. prionoti* (MacCallum, 1917), n. comb., from *Merulinus carolinus; C. smaris* (Ijima, in Goto, 1894),[8] n. comb., from *Smaris vulgaris* (on caudal segment of a *Cymothoa*); *C. squillarum* (Parona and Perugia, 1889), n. comb., from *Bopyrus squillarum;* and *C. taschenbergii* (Parona and Perugia, 1889), n. comb., from *Sargus rondeletii*. Of these, only *C. neomaenis* and *C. prionoti* are known to occur on North American hosts.

Cyclocotyla neomaenis (MacCallum, 1917), n. comb.
Figs. 7–9

Synonyms.—*Diclidophora neomaenis* MacCallum, 1917; *Choricotyle neomaenis* (MacCallum, 1917) Llewellyn, 1941.

Description.—Body fusiform, 9 mm long, including haptor, by 1.1 mm wide. Anterior haptor in form of a pair of suckers, each 80μ in diameter, opening into oral cavity. Posterior haptor 2.5 mm long, distinctly set off from body proper by an isthmuslike constriction, bearing four pairs of pedunculated clamplike suckers. Suckers of anterior three pairs about equal in size, 460μ wide, and those of posterior pair much smaller, 320μ wide; suckers of general type of other representatives of genus, but with heavy corrugations of surface of inner wall of outer quadrants, and with fleshy linguiform pad in depth of sucker cavity; cuticular supporting structure somewhat more complicated than that of other species (Fig. 8); no hooks observed between posterior pair of peduncles. Oral aperture subterminal; pharynx oval, 80μ long by 64μ wide; remainder of digestive tract not observable. Excretory apertures laterodorsal, slightly anterior to level of genital aperture; remainder of excretory system not observable. Genital aperture median, about 696μ from anterior end of body. Cirrus 88μ in diameter, armed with 12 inwardly projecting hooks. Testes relatively few, in median field posterior to ovary. Ovary preequatorial: oötype preovarial, massive, surrounded by numerous unicellular glands. Vitelline follicles numerous, occupying almost entire body width from level of genital aperture to posterior end of body proper, extending into haptor. Vagina and genitointestinal canal not observed. No eggs present.

Host.—*Lutianus analis* (Cuvier and Valenciennes).

Location.—Gills.

Distribution.—United States (Key West, Fla.).

Specimen.—U.S.N.M. Helm. Coll. no. 35587 (type).

This species was described from a single specimen collected by the late Dr. G. A. MacCallum at the New York Aquarium, from a muttonfish obtained from Key West, Fla. The species differs from all others of the genus in the peculiar structure of the haptoral suckers.

Cyclocotyla prionoti (MacCallum, 1917), n. comb.
Fig. 10

Synonyms.—*Diclidophora prionoti* MacCallum, 1917; *Choricotyle prionoti* (MacCallum, 1917) Llewellyn, 1941.

Description.—Body elongate, 3 to 3.7 mm long by 540 to 640μ wide, anterior end with constriction between tip of body and genital aperture. Anterior haptor in form of a pair of suckers, about 88μ in diameter, opening into oral cavity. Posterior haptor palmate, about 640 to 720μ long, with four pairs of pedunculated suckers about 240μ in diameter; peduncles of suckers relatively long and thick. Oral aperture subterminal; pharynx piriform, about 160μ long by 88μ wide; remainder of digestive system not ascertainable in available specimens. Genital aperture median, about 400μ from anterior end of body. Cirrus 40 to 48μ in diameter, armed with 10 inwardly curved hooks. Testes 21 to 32 in number, relatively

[8] The question of authorship of this species in this case parallels that of *Diclidophora merlangi*.

large, median, postovarial. Ovary tubular, folded, median, about one-third of body length from anterior end. Vitelline follicles relatively large, extending from slightly anterior to genital aperture to posterior end of haptor. Seminal receptacle oval, relatively large, posterior to ovary and to right of median line. Genitointestinal canal and vagina not observed. Oötype postovarial, surrounded by prominent mass of unicellular glands. No eggs in available specimens.

Host.—*Merulinus carolinus* (Linnaeus).

Location.—Gills.

Distribution.—United States (Woods Hole, Mass.).

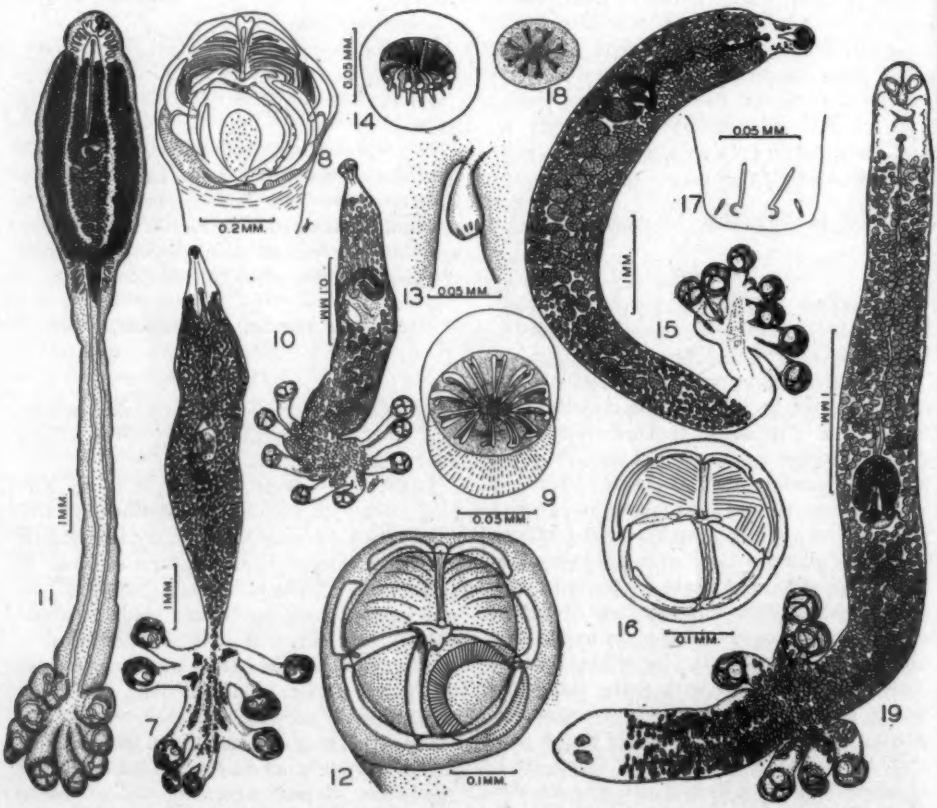
Specimens.—U.S.N.M. Helm. Coll. nos. 35589 (cotypes), 35590, and 35591.

This species is closely related to *Cyclocotyla chrysophryi* (Beneden and Hesse); it differs from that species, in so far as one can determine from the original description, in the number of genital hooks (8 in *C. chrysophryi* and 10 in *C. prionoti*). MacCallum (1917) stated that the number of genital hooks was 13, but this is an error.

Genus **Cyclobothrium** Cerfontaine, 1895

Synonym.—*Diclidophora* Diesing, of Goto, 1894, in part.

Diagnosis.—Haptor indistinctly set off from body proper; suckers sessile. Genital atrium nonmuscular; cirrus armed. Testes numerous, preovarial and postovarial. Vaginae absent.



Figs. 7–9.—*Cyclocotyla neomaenis:* 7, Complete worm, ventral view; 8, haptoral sucker; 9, cirrus. Fig. 10.—*Cyclocotyla prionoti*, complete worm, ventral view. Figs. 11–14.—*Neoheterobothrium affine:* 11, Complete worm, dorsal view; 12, haptoral sucker; 13, haptoral languette; 14, cirrus. Figs. 15–18.—*Neoheterobothrium cynoscioni:* 15, Complete worm, ventral view; 16, haptoral sucker; 17, haptoral languette; 18, cirrus. Fig. 19.—*Pedocotyle morone*, complete worm, dorsal view.

Type species.—*Cyclobothrium sessilis* (Goto, 1894) Cerfontaine, 1895.

This genus comprises *Cyclobothrium iniistii* Yamaguti (1937), from *Iniistius dea; C. semicossyphi* Yamaguti (1938), from *Semicossyphus reticulatus;* and *C. sessilis* (Goto, 1894), from *Choerops japonicus* and *Semicossyphus reticulatus;* all three species are from Japanese hosts.

Genus **Heterobothrium** Cerfontaine, 1895

Synonym.—*Diclidophora* Diesing, of Goto, 1894, in part.

Diagnosis.—Haptor separated from body proper by a long slender isthmus: suckers sessile, framework of anterior pair orientated inversely with respect to that of posterior three pairs. Genital atrium nonmuscular, cirrus armed; testes postovarial. Vaginae absent; vitellaria not extending into haptor.

Type species.—*Heterobothrium tetrodonis* (Goto, 1894) Cerfontaine, 1895.

The type and only species of this genus was obtained from the gills of *Tetrodon* sp. in Japan; it is not known to occur on North American hosts.

Neoheterobothrium, n. gen.

Diagnosis.—Haptor separated from body proper by a long slender isthmus; suckers pedunculated, with framework of all pairs orientated in same manner. Other characters as in *Heterobothrium.*

Type species.—*Neoheterobothrium affine* (Linton, 1898), n. comb.

The species referable to this genus are *Neoheterobothrium affine* (Linton, 1898) from *Paralichthys dentatus* and *N. cynoscioni* (MacCallum, 1917), n. comb., from *Cynoscion regalis,* both from North America; and possibly *Octobothrium leptogaster* (F. S. Leuckart, 1830) (= *N. leptogaster* (F. S. Leuckart, 1830), n. comb.) from *Chimaera monstrosa* in Europe.

Neoheterobothrium affine (Linton, 1898), n. comb.

Figs. 11–14

Synonyms—*Octoplectanum affine* Linton, 1898; *Diclidophora affinis* (Linton, 1898) Linton, 1901; *Choricotyle affine* (Linton, 1898) Llewellyn, 1941.

Description.—Body elongate, 11 to 20 mm long by 2 to 3 mm wide, divided into three parts, namely, body proper, isthmus and haptor. Anterior haptor consisting of a pair of suckers 120 to 170μ in diameter, opening into oral cavity. Posterior haptor 2 to 3 mm. in diameter, consisting of 8 digitate appendages bearing suckers 425 to 510μ in diameter supported by a heavily cuticularized framework as shown in Fig. 12. Between peduncles of posterior pair of suckers is a small projection or "languette," about 50μ long by 25μ wide, apparently bearing two pairs of hooks (hooks missing but insertions clearly visible). Oral aperture subterminal; pharynx piriform, 170 to 180μ long by 110 to 170μ wide; intestinal branches with prominent lateral diverticula as far back as isthmus, then without diverticula, extending into haptor. Genital aperture median, about 510 to 680μ from anterior end of body; cirrus armed with a circle of incurved hooks, 12 to 16 in number, each about 20μ long. Testes numerous, number not ascertainable, postovarial, in median field. Ovary folded, median, approximately in equatorial region of preisthmian portion of body. Vitelline follicles extending from a short distance posterior to level of genital aperture to distal part of preisthmian portion of body. Seminal receptacle and genitointestinal canal not observed. Egg about 150μ long by 57μ wide, with prolongation at each pole.

Host.—*Paralichthys dentatus* (Linnaeus) and *P. lethostigmus* Jordan and Gilbert.

Location.—Mouth.

Distribution.—United States (Woods Hole, Mass., and Grand Island Region, La.).

Specimens.—U.S.N.M. Helm. Coll. nos. 4876 (type), 4875, and 8156.

The redescription of this species as given here is based on toto mounts of the type and other specimens described from Woods Hole, Mass., by Linton (1898; 1901; 1940). The preparations were not very good and some details could not be made out. Melugin (1940) has reported this species from Louisiana.

Neoheterobothrium affine resembles *Octobothrium leptogaster* (F. S. Leuckart) [= *Neoheterobothrium leptogaster* (F. S. Leuckart)] as described by Olsson (1876) and by Parona and Perugia (1892) in possessing a long, slender isthmus between body proper and haptor. The two species are also similar in that both possess a hook-bearing lobe or "languette" between the peduncles of the posterior pair of haptoral

suckers (see Ruszkowski, 1934, for description of the hooks of *O. leptogaster*). The presence of a "languette" in these species may not be of especial significance, however, as many of the members of the family Diclidophoridae possess this structure. In spite of obvious similarities there is little likelihood of the two species being identical because of their host affinities, there being an extraordinary host specificity among the Monogenea.

Neoheterobothrium cynoscioni
(MacCallum, 1917), n. comb.
Figs. 15–18

Synonyms.—Diclidophora cynoscioni MacCallum, 1917; *Choricotyle cynoscioni* (MacCallum, 1917) Llewellyn, 1941.

Description.—Body elongate, 7 to 10 mm long by 400 to 616μ wide, attenuated posteriorly. Anterior haptor in form of a pair of suckers 120μ in diameter opening into oral cavity. Posterior haptor somewhat palmate, about 640μ long, with four pairs of pedunculated suckers, and with small, flaplike lobe bearing two pairs of hooks between peduncles of last pair of suckers; suckers about 288μ in diameter, with heavily cuticularized framework as shown in Fig. 16; posterior lobe 120μ long by 72μ wide, outer hooks 12μ long and inner hooks 28 to 30μ long. Oral aperture subterminal; pharynx piriform, 120μ long by 80μ wide; esophagus and intestinal branches not traceable in available specimens. Genital aperture median, about 430 to 460μ from anterior end of body. Cirrus 48 to 50μ in diameter, armed with eight hooks. Testes 28 to 30 in number, relatively large, occupying median field posterior to ovary. Ovary tubular, folded, median, about one-third of body length from anterior end. Vitelline follicles extending from level of genital aperture to about midway between level of last testis and anterior margin of haptor. Seminal receptacle oval, relatively voluminous, posterior to ovary and slightly to right of median line. Genitointestinal canal and vagina not observable. No eggs present.

Host.—Cynoscion regalis (Bloch and Schneider).

Location.—Gills.

Distribution.—United States (Woods Hole, Mass.).

Specimens.—U.S.N.M. Helm. Coll. nos. 35592 (type) and 35593.

The type specimen of this species is greatly elongated and somewhat mutilated; it was collected by the late Dr. G. A. MacCallum August 26, 1914. Three additional specimens are available, collected by MacCallum July 2, 1924; these are in much better condition than the type, and the greater part of the above description is based upon these specimens. In the type specimen the small lobe or "languette" at the posterior end of the haptor was folded over one of the peduncles and was not observed by MacCallum.

Cyclocotyloides, n. gen.

Diagnosis.—Haptoral suckers pedunculated. Genital atrium strongly muscular; cirrus unarmed; otherwise similar to *Cyclocotyla.*

Type species.—Cyclocotyloides pinguis (Linton, 1940), n. comb.

Only one species, the type, is referable to this genus. *C. pinguis* was described by Linton (1940) as *Diclidophora pinguis* and was based on specimens from the mouth of *Albatrossia pectoralis.* The specimens available to the writer were fragmentary and nothing can be added to the original description. The absence of clamplike haptoral suckers excludes this species from the genus *Diclidophora* and the presence of a muscular genital atrium and the absence of an armed cirrus exclude it from other genera of the Cyclocotylinae.

Genus **Diclidophoropsis** Gallien, 1937

Diagnosis.—Haptoral suckers pedunculated. Genital atrium nonmuscular; cirrus armed; testes postovarial. Vaginae present; vitellaria extending into haptor.

Type species.—Diclidophoropsis tissieri Gallien, 1937.

The type and only species was described by Gallien (1937) from specimens collected on *Macrurus laevis* in the Atlantic Ocean south of Ireland.

Genus **Pedocotyle** MacCallum, 1913

Synonym.—Podocotyle MacCallum, 1913, not Dujardin, 1845.

Diagnosis.—Haptor linguiform, not distinct from body proper, bearing three pairs of pedunculated suckers at anterior end of haptor and one pair of smaller sessile suckers near posterior end. Testes postovarial. Vitellaria extending into haptor.

Type species.—*Pedocotyle morone* MacCallum, 1913.

Pedocotyle morone MacCallum, 1913
Fig. 19

Synonym.—*Podocotyle morone* MacCallum, 1913.

Description.—Body slender, 5.9 mm long by 500μ wide, apparently flat and ribbonlike, sides parallel. Anterior haptor in form of two suckers, 115μ in diameter, opening into mouth cavity. Posterior haptor linguiform, not distinguishable from body proper, with 3 pairs of pedunculated suckers at its anterior end and one pair of smaller sessile suckers near posterior end. Anterior pedunculated suckers 228μ in diameter, with heavily cuticularized supporting structure similar to that in *Neoheterobothrium cynoscioni* (see Fig. 16); peduncles about 228μ long by 180μ in diameter; suckers of posterior pair about 76μ in diameter, apparently of the same structure as those of anterior pairs (crushed in type specimen). Mouth terminal; pharynx piriform, 150μ long by 83μ wide; esophagus and intestine not discernible in available specimen. Genital aperture median, about 375μ from anterior end of body. Cirrus muscular, 57μ in diameter, armed with 10 inwardly curved hooks. Testes 14 in number, about 115μ in diameter, in median field between ovary and anterior end of haptor. Ovary tubular, folded, median. Vitelline follicles occupying greater part of body from level of genital aperture to near posterior end of haptor. Seminal receptacle small, posterior to ovary and to right of median line. Genitointestinal canal and vagina not observed. Oötype prominent, surrounded by numerous unicellular glands. No eggs in available specimen.

Host.—*Morone americana* (Gmelin).

Location.—Gills.

Distribution.—United States (New York).

Specimen.—U.S.N.M. Helm. Coll. no. 35594 (type).

This species, based on a single specimen and originally described by MacCallum (1913a; 1913b), is peculiar in the arrangement of the suckers of the posterior haptor; because of its unique appearance, further comment as to its differentiation from related forms is unnecessary.

DICLIDOPHORIDAE OF UNCERTAIN POSITION

Genus **Platycotyle** Beneden and Hesse, 1863

Diagnosis.—Haptor rectangular, bearing four widely separated pedunculated suckers; terminal hooks absent.

Type species.—*Platycotyle gurnardi* Beneden and Hesse, 1863.

The type and only species of the genus is known only from the very inadequate description given by Beneden and Hesse (1863); this worm was collected from the gills of *Trigla gurnardus* in Europe.

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ZOOLOGY.—*Notes on Mexican urocoptid mollusks.*[1] PAUL BARTSCH, U. S. National Museum.

The preparation of a monograph on the Cuban land mollusks of the family Urocoptidae by Dr. Carlos de la Torre and myself has made it necessary to subject the entire family to a critical overhauling. This has brought to light considerable misunderstanding on the part of the older authors, due largely to the fact that at the time when they were working little was known of the anatomy and structure of the columella, the lamellation of the interior shell, and even less of the circumscribed ecologic conditions under which these animals exist. Today some of the deficiencies have been met, more or less, and the mass of material available for study furnishes a clearer viewpoint, and the results of the revisional work show a

[1] Published by permission of the Secretary of the Smithsonian Institution. Received October 16, 1942.

consistent zoogeographic pattern. For the new species here described I am indebted largely to the energetic efforts of Miss Marie E. Bourgeois.

Genus **Bostrichocentrum** Strebel

Bostrichocentrum Strebel, Beitr. Kentn. Fauna Mexico, pt. 4: 80. 1880.

Type: *Bostrichocentrum tryoni* Pfeiffer.

This group appears confined to central Mexico. The known species are listed with their type localities:

tamaulipense Bartsch: Camargo, Tamaulipas
hidalgoensis Bartsch: Bonanza, Zimapan, Hidalgo
veracruziana Dall: Misantla, Veracruz
veracruzicolum, n. sp.: Veracruz
ronzoni, n. sp.: Pajaro Verde, Puebla
pilsbryi Dall: City of Puebla, Puebla
tryoni Pfeiffer: Matamoros de Izucar, Puebla
eurybia Bartsch: Near Rio Balsas, Guerrero
galathea Bartsch: Near Rio Balsas, Guerrero
goldmani Bartsch: Tamazulapan, Oaxaca
gealei H. Adams: Putla, Oaxaca

B. hogeana von Martens, Maltrata, Veracruz, is doubtfully referred here.

Bostrichocentrum veracruzicolum, n. sp.

Fig. 4

Shell cylindroconic, flesh colored with the nucleus and the early postnuclear whorls pale horn colored. The nucleus consists of 2.7 turns, which are well rounded, microscopically granulose, and form an obtuse apex. The five postnuclear whorls following increase regularly in size, after which the shell becomes cylindric. They are marked by retractively curved axial riblets, which gradually become less strongly developed and on the cylindric portion are merely indicated as incremental lines. The postnuclear whorls on the conic portion are well rounded, while the later turns are almost flattened. The suture is well constricted. The last whorl is short, narrowly umbilicate, with well-rounded base crossed by axial riblets, which are irregular in their development, size, and spacing. The last whorl is usually solute, though at times adnate to the parietal wall. The solute portion rarely extends over one-tenth of a turn. The aperture is very broadly pear shaped, the narrow portion being at the posterior angle. The peristome is moderately expanded and reflected. The columella is hollow and bears a strong fold a little posterior to the basal wall on the penultimate whorl, which fades out on the turn preceding it.

The type, U.S.N.M. 536877, was received from Miss Bourgeois, who states that it was collected in the neighborhood of Orizaba or Cordoba, or a little farther south, in the state of Veracruz. It has 12.8 whorls and measures: height, 12 mm; diameter, 2.9 mm. U.S.N.M. 536878 contains two topotypes, and another topotype is in the collection of Miss Bourgeois.

In type of sculpture this species resembles *B. pilsbryi* but is easily differentiated by its much smaller size and less elongate form.

Bostrichocentrum ronzoni, n. sp.

Fig. 3

Shell small, pupiform, white, with the nuclear whorls horn colored. The nuclear turns and the first four postnuclear whorls increase regularly in size to form a conic apex. The rest of the shell is cylindric, the last whorl being slightly contracted. The nucleus consists of 2 turns, which are strongly rounded and minutely granulose. The postnuclear whorls are marked by numerous closely spaced, well-developed, axial riblets, which are separated by intercostal spaces that vary from mere impressed lines to equal the width of the ribs. Beginning with the middle of the cylindric portion, the axial ribs become stronger and more distantly spaced, reaching their greatest width on the last turn. All the postnuclear whorls are well rounded. Suture well impressed. Periphery of the last whorl well rounded. Base short, well rounded, narrowly openly umbilicated, and marked by the continuation of the axial ribs. Aperture subovate; peristome slightly expanded and reflected, usually adnate on the parietal wall to the preceding turn though at times slightly solute. The columella is hollow and bears a fold a little above the basal wall which is very strong in the penultimate whorl and extends feebly throughout the rest of the spire. The columella shows retractively curved incremental lines.

The type, U.S.N.M. 536874, was received from Miss Bourgeois and was collected by Dr. M. del Campo at Pajaro Verde, Puebla. It has 12.2 whorls and measures: height, 10.1 mm; diameter, 3.9 mm. U.S.N.M. 536875 contains two topotypes and an additional topotype is in Miss Bourgeois's collection. U.S.N.M. 536876 contains five additional specimens, which are

said to have come from either Cordoba or Orizaba, the exact locality being not definitely known. An additional specimen from this lot also is in Miss Bourgeois's collection.

This species in sculpture resembles *B. tryoni* but can readily be distinguished by its much smaller size. It has much finer sculpture than *B. eurybia* and stronger sculpture than *B. galathea*.

Genus **Haplocion** Pilsbry

Haplocion Pilsbry, Man. Conch. 15: 89. 1902.

Type: *Holospira pasonis* Dall.

The known species, with their type localities, are:

bryantwalkeri Pilsbry: Rio Conchos near Rio Grande, Chihuahua
semisculpta Stearns: San Carlos Cañon, Chihuahua
townsendi Bartsch: Cerro Chilicote, Chihuahua
coahuilensis Binney: Cienega Grande, Coahuila
minima von Martens: Hermosillo, Sonora
remondi Gabb: Valle de Sahuaripa, Sonora
guaymasensis, n. sp.: Guaymas, Sonora
percostata Pilsbry: Sonora
mazatlanica, n. sp.: Mazatlan, Sinaloa
mathewsoni Bartsch: D. F. Mexico,
mariae Bartsch: Ixtapan de la Sal, Mexico.
campoi, n. sp.: Las Grutas, Guerrero
bartschi Pilsbry & Cockerell: Balsas, Guerrero
fusca von Martens: Omilteme, Guerrero
pasonis Dall: El Paso, Texas
mesolia Pilsbry: Sanderson, Texas
tantalus Bartsch: Arizona or New Mexico

Haplocion guaymasensis, n. sp.

Fig. 1

Shell elongate-pupiform, flesh colored. The nucleus consists of 2.5 well-rounded, microscopically granulose turns. These, combined with the first four postnuclear whorls, form a conic apex. The remaining turns are cylindric. The postnuclear whorls are well rounded and crossed by decidedly retractively slanting axial ribs, which are separated by spaces double the width of the ribs or even wider. Suture strongly constricted. The last two turns are inflated and strongly rounded. Base short, strongly rounded, openly umbilicated and marked by the weak continuation of the axial ribs. The last whorl is solute for about one-tenth of a turn. Aperture subcircular; peristome broadly expanded and reflected. The columella is rather broad and hollow and smooth.

The type, U.S.N.M. 536883, was collected by Miss M. E. Bourgeois near the beach at Guaymas, Sonora. It has 13 whorls and measures: height, 12 mm; diameter, 4 mm. U.S.N.M. 522967 contains two topotypes.

This species resembles most nearly *Haplocion mazatlanica* but differs in being stouter and in having the whorls much less rounded and the axial ribs more distantly spaced.

Haplocion mazatlanica, n. sp.

Fig. 6

Shell small, cylindroconic, pale horn colored. The nucleus consists of 2.5 well-rounded granulose turns. The postnuclear whorls are decidedly inflated, strongly rounded, and marked by somewhat sinuous, retractively curved axial ribs, which are almost as wide as the spaces that separate them. Suture very strongly constricted. The last whorl is short. Base short, strongly rounded, narrowly openly umbilicated, and marked by the continuation of the axial ribs. Aperture subcircular; peristome broadly expanded, widest on the inner lip and parietal wall. Columella moderately stout, hollow with a slight twist in the later whorls.

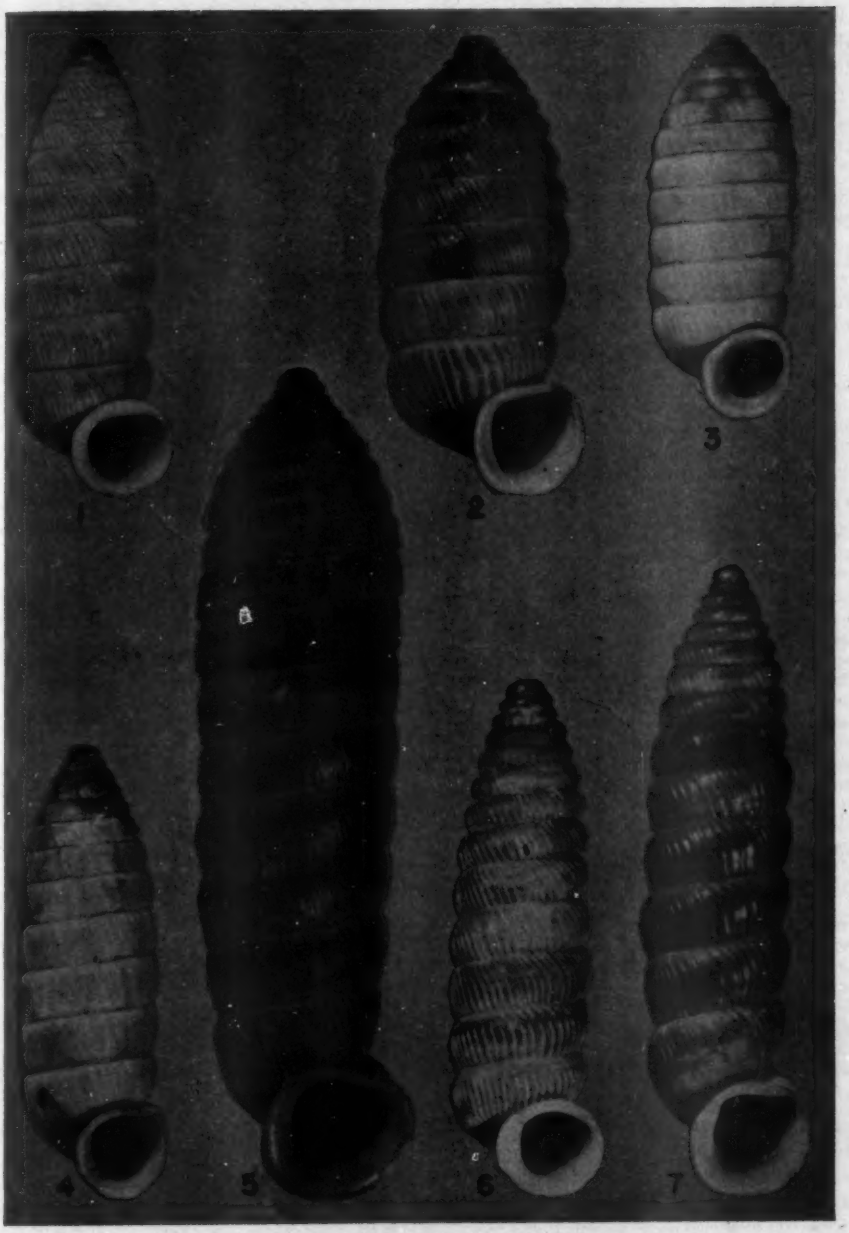
The type, U.S.N.M. 536884, was collected by C. R. Orcutt at Mazatlan. It has 14 whorls and measures: height, 13.5 mm; diameter, 4.1 mm. U.S.N.M. 381625 contains four topotypes.

This species resembles most nearly *Haplocion guaymasensis* but differs from it in being slenderer and having the whorls much more inflated and the axial ribs more closely spaced.

Haplocion campoi, n. sp.

Fig. 7

Shell cylindroconic, pale horn colored with the interior of the aperture pale brown. The nucleus consists of 2.5 well-rounded whorls, of which the last half of the first is wider than the rest of the turns. They are minutely granulose. Beginning with the sixth postnuclear whorl the shell assumes a cylindric form. All the whorls are almost flattened, well rounded, and marked by retractively curved, well-rounded, strongly developed axial ribs, which are about as wide as the spaces that separate them on the early turns, but a little less wide on the later whorls. Suture strongly constricted. The last whorl is somewhat attentuated and rather long. The base is short and rimate at the umbilicus and crossed by the continuation of the axial ribs. The last whorl is solute for about one-eighth of a turn. Aperture subequal; peristome moder-



Figs. 1–7.—New species of Mexican urocoptid mollusks: 1, *Haplocion guaymasensis;* 2, *Coelostemma prezidioensis;* 3, *Bostrichocentrum ronzoni;* 4, *Bostrichocentrum veracruzicolum;* 5, *Coelostemma antricola;* 6, *Haplocion mazatlanica;* 7, *Haplocion campoi.*
(All figures ×6)

ately expanded and reflected. Columella slender and almost solid in the later whorls, but more hollow in the earlier turns, almost straight.

The type, U.S.N.M. 536880, has 15 whorls and measures: height, 17 mm; diameter, 4.6 mm. It was collected by Dr. Martin del Campo at Las Grutas, Cacahuamilpa, Guerrero. U.S.N.M. 536881 contains nine topotypes. U.S.N.M. 536882 contains four additional topotypes collected by Miss M. E. Bourgeois.

This species in the inflation of the whorls resembles *Haplocion mariae* Bartsch but differs from it in being much larger and in having the ribs more closely spaced.

Genus **Coelostemma** Dall

Coelostemma Dall, Nautilus 9: 50. 1895.

Type: *Holospira elizabethae* Pilsbry.

Following are the known species, with their type localities:

dalli Pilsbry: Sierra Guadelupe, Coahuila
strebeliana Pilsbry: Sierra Guadelupe, Coahuila
lichenophora Dall: Encarnacion, Hidalgo
bourgeoisiana Bartsch: Ixtapan de la Sal, Mexico
antricola, n. sp.: Las Grutas, Guerrero
igualaensis Bartsch: Iguala, Guerrero
balsasensis Bartsch: Rio Balsas, Guerrero
adria Bartsch: Rio Balsas, Guerrero
adana Bartsch: Rio Balsas, Guerrero
elizabethae Pilsbry: Amula, Guerrero
herrerae Bartsch: Silacayoapan, Oaxaca
presidioensis, n. sp: Presidio, Veracruz

The following species whose columellar structure is unknown are doubtfully placed here:

cretacea Pfeiffer: Mexico, without specific locality
microstoma Pfeiffer: Mexico, without specific locality
imbricata von Martens: Mexico, without specific locality
teres Menke: Puebla
teres var. β Crosse & Fischer: Puebla

Coelostemma antricola, n. sp.

Fig. 5

Shell elongate-cylindroconic, with the nucleus and the early post-nuclear whorls horn colored, the rest flesh colored. The nucleus consists of 2.5 well-rounded, minutely granulose whorls. The succeeding seven turns increase rapidly in size to form a conic apex. The rest of the shell is cylindric, but the whorls become slightly contracted from the broadest expansion at the junction of the cylindric portion and the conic part anteriorly. The conic part and the last whorl are marked by strong, rather distantly spaced axial ribs. Here these are only about half as wide as the spaces that separate them and they develop slight nodules at the slightly overhanging portion of the turns at the suture. On the cylindric portion the axial ribs become much finer and more closely spaced. Suture moderately strongly constricted. The last whorl is somewhat prolonged, slightly angulated at the periphery. Base short, slightly rounded, rimate at the umbilicus, and marked by the continuation of the axial ribs. The last whorl is solute for about one-fifth of a turn. Aperture subtriangular; peristome moderately expanded and reflected. The columella is very broad, widest in the later part of the conical portion of the shell, hollow, and marked by slender, retractively curved, axial riblets.

The type, U.S.N.M. 536885, was collected at the base of a limestone boulder in a ravine near Las Grutas, Cacahuamilpa, Guerrero. It has 18.3 whorls and measures: height, 21.1 mm; diameter, 5.6. mm. A topotype is in Miss Bourgeois's collection.

This species recalls *Coleostemma bourgeoisiana* but is much larger and much more cylindric.

Coelostemma presidioensis, n. sp.

Fig. 2

Shell small, pupoid, pale horn colored, the later whorls flesh colored, which is also the color of the interior of the aperture. The nucleus consists of 2 well-rounded, microscopically granulose whorls. The nucleus, plus the succeeding five turns, complete the conic spire, the remaining turns being more or less cylindric, contracting slightly toward the base. All the whorls are moderately well rounded. On the conic portion they are covered by rather strong, distantly spaced ribs, which are only about one-half to one-third as wide as the spaces that separate them. On the central part of the cylindric portion the ribs become much finer and more closely spaced. On the penultimate whorl they are almost obsolete, while on the last whorl they are again very strong and very distantly spaced, the intercostal spaces being at least four times the width of the ribs. Suture very strongly constricted. Base very short, narrowly umbilicated, and marked by the strong continuation of the ribs which extend over the umbilicus. Aperture subtriangular;

peristome moderately expanded, reflected, and thickened. The columella is stout, almost one-fourth the width of the interior of the whorls, and crossed by slender, slightly retractively curved axial ribs.

The type, U.S.N.M. 536886, was collected by Miss M. E. Bourgeois at Presidio, Veracruz. It has 13 whorls and measures: height, 12 mm; diameter, 5 mm.

The small form and pupoid shape will differentiate this from all other species except possibly *Coelostemma imbricata* von Martens, in which the middle whorls are not cylindric.

ICHTHYOLOGY.—*Two marine fishes new to the fauna of Alaska, with notes on another species.*[1] LEONARD P. SCHULTZ, U. S. National Museum.

Recently in identifying a collection of fishes taken in Alaskan waters by Dr. Waldo L. Schmitt, two of the species proved to be new to the known fauna of Alaska and of North America. Additional information is given on another species.

Sebastodes polyspinis Taranetz and Moiseev
Fig. 1

Sebastodes polyspinis Taranetz and Moiseev, *in* Taranetz, Vestnik dv. Eiliala Akad. Nauk SSSR no. 1–3: 69. 1933; Taranetz, Bull. Pacific Sci. Inst. Fish. Oceanog., 2: 94. 1937.

The discovery of six specimens of *Sebastodes* in Schmitt's collection with XIV dorsal spines all belonging to the same species was a surprise, because among the hundreds of specimens of this group examined from the American side of the North Pacific, all have had XIII dorsal spines. From time to time species of *Sebastodes* have been reported from the Asiatic side of the North Pacific Ocean with XIV spines, but these specimens are thought to be the first recorded from Alaska. My studies indicate that the Alaskan specimens belong to the species *Sebastodes polyspinis*. Although there are some minor differences, such as in color, it is thought best not to describe them as a new form without first making direct comparisons with the types of *S. polyspinis*, which is not now possible because of the war.

The following key was prepared from the available specimens and literature, and by means of it one should be able to identify the North Pacific species of *Sebastodes* with XIV dorsal spines that have a flattish to convex interorbital space.

1*a*. Tubes in the lateral line 44 or fewer.

2*a*. Lateral line tubes 35; vertical scale rows from upper edge of gill opening to base of caudal fin about 65; scales above lateral line at base of first soft ray of dorsal 6 and below lateral line at origin of anal 16; mandible scaly; pectoral rays 16, lower 8 unbranched and swollen; anal rays III, 8; dorsal XIV, 13; interorbital a little convex; nasal and preocular spines present; parietal, postocular, and nuchal with weak spine; color reddish, marked with about 5 indefinite dark saddles along the back; peritoneum black; mouth cavity and gill cavities dusky; Japan... *Sebastodes owstoni* Jordan and Thompson[2]

2*b*. Tubes in lateral line 40; mandible probably naked; pectoral rays 17; anal III, 10; dorsal XIV, 15; interorbital space flat; nasal and parietal spines strong; preocular, supraocular and postocular very weak; tympanic, coronal and nuchal absent; color red, no spots. Southeast coast of Siberia.... *Sebastodes pavlenkoi* Wales[3]

1*b*. Tubes in lateral line 45 or more.

3*a*. Tubes in lateral line about 63; vertical rows of scales above lateral line about 115; scales above lateral line 11 or 12 and 17 below; pectoral rays 19, 9 lower ones unbranched; anal III, 7; dorsal XIV, 13; gill rakers 12+27; mandible scaly; interorbital convex; nasal spine small but sharp; other cranial spines absent; peritoneum black; color brownish, top of head and upper sides clouded with dusky; lateral line run-

[1] Published by permission of Secretary of the Smithsonian Institution. Received September 5, 1942.

[2] *Sebastodes owstoni* Jordan and Thompson, Mem. Carnegie Mus. 6 (4): 270, pl. 31, fig. 3. 1914; Jordan and Hubbs, Mem. Carnegie Mus. 10(2): 260, 1925; SCHMIDT, P. J., Trans. Pacific Committee Acad. Sci. USSR 2: 94. 1931.

[3] *Sebastodes ruber* Pavlenko, Fishes Peter the Great Bay, Trd. Obsc. Test. Kanzani, p. 42. 1910 (name preoccupied); *Sebastodes pavlenkoi* Wales, Copeia, No. 1, p. 10. 1930 (new name).

ning in a conspicuous light streak; upper part of opercles with a black spot. Japan . . . *Sebastodes itinus* Jordan and Starks[4]

3*b*. Tubes in lateral line 45 to 50; vertical scale rows 85 to 100; gill rakers on first gill arch 10 to 12+26 or 27; peritoneum black; interorbital convex; nasal spines small but sharp; other cranial spines absent.

4*a*. Mandible naked; vertical scale rows about 100 (these data based on a specimen, U.S.N.M. no. 102454, from Okhotsk Sea); pectoral rays 19, lower 10 or 11 unbranched; anal rays III, 8; dorsal rays XIV, 17; gill rakers about 10+26; black streak along maxillary; one below eye, then a white streak, then a broad blotch behind eye; two blotches on opercle; an indistinct blotch or bar below spiny dorsal and another below soft dorsal. Asiatic side Bering Sea . . . *Sebastodes glaucus* (Hilgendorf)[5]

4*b*. Mandible scaly; vertical rows 88 to 91; pectoral rays 18, lower 8 or 9 unbranched; anal rays III, 7 or 8; dorsal XIV, 14 or 15; lips of lower jaw dusky; a blackish streak along lower part of maxillary; another oblique black streak from under eye across preopercle, a pale one above and behind eye dusky; opercle with 2 dusky blotches; upper median fins dusky; body above more or less coarsely reticulated or marbled with dusky; mouth and gill cavities with traces of dusky shades here and there; base of pectoral with dusky area; trace of a wide pale band along upper sides and another along lower sides, both probably reddish in life. Bering Sea; Shumagin and Aleutian Islands . . . *Sebastodes polyspinis* Taranetz and Moiseev

Since the publication by Taranetz (1933: 69–70) is mostly in Russian, I give below a translation (made for me) of the description of *S. polyspinis:*

"Description of our specimens: D XIV (XIII), 13–15: A III, 7–8; gill rakers on the outside surface of first arch 9–12+23–26; P 18 (4 fish); tubes in lateral line 48–50 (57?); 28 vertebrae (4 fish) with urostyle.

"The body is covered with ctenoid scales; accessary scales are missing; the head, except the gill membranes, is covered with very small scales; the smallest are situated on the upper and lower jaws on the brachiostegal rays, and on the front of the head; ridges on the head are not developed except the parietals; on the operculum there are 2 sharp spines: on the preoperculum there are blunt spines, two or three of them are split at the ends; nasal spines hidden in the skin: base of skull curved; parietals not connected; interorbital space is convex; lower jaw protrudes forward and has a strong knob on the symphysis.

"The next to the last dorsal spine extends half way out along the last; the second anal spine is shorter and thicker than the third one.

"Color in formalin: Sides of body are dark without spots; the dorsal part is darker; the ventral side pale; the edges of the first dorsal black; peritoneum black; other fish vary from pale to brown with black spots.

"D. XIV, 13; A III, 8; P. 18; gill rakers 12+26; lateral line tubes 48–50. The length of the head is 107 mm. The length of the body 360 (?); without caudal 305; diameter of eye 21.0; diameter of orbit 25.5; interorbital space 23.1; upper jaw 47.2; lower jaw 59.0; height of the head 88.3; length of the longest gill raker 14.7; maximum height of the body 110.5; minimum 25.9; length of pectoral (from the upper edge of the base to the end of longest ray when the fin is folded against the body) 80.7; base of pectoral 29.0; length of pelvic 62.2; length of base of pelvic 35.9; length of base of first dorsal 111.5; second dorsal 59.7; length of base of anal 42.9; height of longest dorsal spine (fifth) 33.4; height of 13th spine 16.1; of 14th 24.8; length of second anal spine 29.6; length of third anal spine 29.8

"From other species *S. pavlenkoi* Wales (=*S. ruber* Pavlenko) differs by the number of pores in lateral line, by the absence of spines on the upper part of the head, and in other details. No other type of *Sebastodes* has 14 dorsal

[4] *Sebastodes itinus* Jordan and Starks, Proc. U. S. Nat. Mus. 27: 99, fig. 1, 1904. Fig. 1 has but XIII dorsal spines, but Dr. G. S. Myers informs me that the type has XIV dorsal spines, and there are 63 lateral-line tubes instead of 54 as published.

[5] *Sebastes glaucus* Hilgendorf, S. B. Ges. Naturf. Freunde, p. 170. 1880. Although I have not been able to locate the specimen from Bering Island reported upon as *S. glaucus* (by Jordan and Gilbert, Rept. U. S. Fur Seal Comm., pt. 3: 447. 1898; Jordan and Evermann, U. S. Nat. Mus. Bull. 47, pt. 2: 1777, 1898; and Jordan and Starks, Proc. U. S. Nat. Mus. 27: 97. 1904), it probably is not this species but *Sebastodes polyspinis* Taranetz and Moiseev.

spines except *S. glaucus* to which ours is not related. Our fish differs from *S. jordani*, *S. goodei*, *S. paucispinis* by the presence of 14 spines in the first dorsal and in the number of pores in the lateral line.

"A fish referred to by P. J. Schmidt as *S. ciliatus* (*S. taczanowskii* according to Soldatov and Lindberg, p. 156, not *S. ciliatus* Tilesius) appears to be the same, but because of slight variations in formulae we can not affirm it conclusively as P. J. Schmidt does not check on it further.

"Distribution: from about Pribilof Islands to east coast of Kamchatka."

The data presented in Tables 1 and 2 form the basis for the identification of the Alaskan specimens as *S. polyspinis*, which were collected as follows:

U.S.N.M. no. 119375. Alaska: 22 miles ENE. Castle Rock, off Big Koniuji Island (Shumagin Islands), trawl, 95–120 fathoms, October 2, 1940, 1 specimen, 208 mm.

U.S.N.M. no. 119379. Alaska: Pavlof Bay, trawl, 10–30 fathoms, September 25, 1940, 1 specimen, 117 mm.

U.S.N.M. no. 19376. Alaska: King Cove, trawl, 15–22 fathoms, October 16, 1940, 2 specimens, 189 and 144 mm.

U.S.N.M. no. 119378. Alaska: Castle Bay, trawl, 45–60 fathoms, October 29, 1940, 1 specimen, 153 mm.

U.S.N.M. no. 119377. Alaska: Olga Bay, trawl, 38–95 fathoms, November 4, 1940, 1 specimen, 145 mm.

TABLE 1.—COUNTS AND MEASUREMENTS OF SEBASTODES POLYSPINIS TARANETZ AND MOISEEV. (All measurements expressed in hundredths of the standard length.)

Characters	Types from Bering Sea	Alaskan Specimens	
Dorsal spines	XIV	XIV	XIV
Dorsal soft rays	13–15	14	15
Anal rays	III, 7–8	III, 7	III, 8
Gill rakers first arch	9 to 12 + 23 to 26	12+27	11+26
Pectoral rays	18	18–18	18
Unbranched lower pectoral rays	—	9–9	8
Tubes lateral line	48–50	50	48
Vertical scale rows	—	91	85
Scales above lateral line	—	11	10
Scales below lateral line	—	17	16
Standard length in millimeters	305	208	117
Diameter of orbit	8.38	9.62	9.4
Interorbital space	7.01	7.69	7.7
Length of maxillaries of upper jaw	15.4	15.4	15.6
Length of lower jaw	19.4	17.8	17.5
Longest gill raker	4.82	5.05	5.12
Depth (greatest)	36.2	32.7	34.7
Least depth caudal peduncle	8.46	9.13	9.4
Length of pectoral fin	26.4	27.2	28.6
Length of pelvic fin	20.4	20.9	20.1
Length of base first dorsal	36.7	37.5	37.6
Length of base second dorsal	19.6	20.7	22.6
Length of base of anal	14.2	15.8	15.4
Length of longest dorsal spine (5th)	10.9	12.5	12.8
Length of thirteenth dorsal spine	5.28	7.21	8.53
Length of fourteenth dorsal spine	8.16	10.1	12.8
Length of second anal spine	9.68	11.1	12.8
Length of third anal spine	9.78	11.5	14.1
Length of head	—	33.2	34.2
Preorbital width	—	1.68	1.88
Length of caudal peduncle	—	20.9	23.1
Postorbital length of head	—	15.6	16.2

TABLE 2.—COUNTS RECORDED FOR CERTAIN SPECIES OF SEBASTODES WITH XIV DORSAL SPINES

Species	Fin rays													Lower unbranched pectoral rays			
	Soft dorsal					Soft anal				Pectoral							
	13	14	15	16	17	7	8	9	10	16	17	18	19	8	9	10	11
polyspinis	1	5	1	–	–	3	4	–	–	–	–	7	–	1	6	–	–
glaucus	–	–	–	–	1	–	1	–	–	–	–	–	2	–	–	1	1
itinis	1	–	–	–	–	1	–	–	–	–	–	–	1	–	1	–	–
owstoni	1	–	–	–	–	–	1	–	–	1	–	–	–	1	–	–	–
pavlenkoi	–	–	1	–	–	–	–	–	1	–	1	–	–	–	–	–	–

Species	Number of gill rakers on first gill arch									Pore in lateral line							
	Above angle			Below angle		Total gill rakers											
	10	11	12	26	27	36	37	38	39	35–37	38–40	41–43	44–47	48–50	51–53	54–57	58–60	61–63
polyspinis	3	2	2	5	2	2	3	1	1	–	–	–	4	3	–	–	–	–
glaucus	1	–	–	1	–	1	–	–	–	–	–	–	1	–	–	–	–	–
itinis	–	–	1	–	1	–	–	–	1	–	–	–	–	–	–	–	–	1
owstoni	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–
pavlenkoi	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–

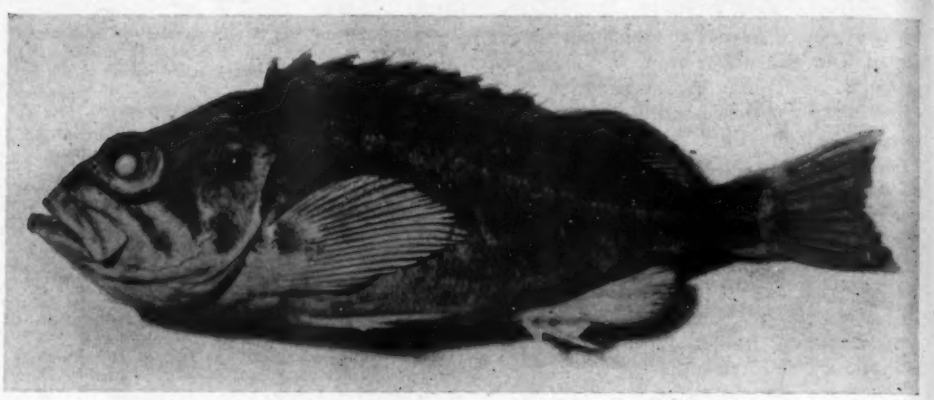


Fig. 1.—*Sebastodes polyspinis* Taranetz and Moiseev. Photograph of an Alaskan specimen.

Eurymen gyrinus Gilbert and Burke

Eurymen gyrinus Gilbert and Burke, Bull. U. S. Bur. Fish. **30**: 64. 1912 (type, U.S.N.M. no. 74377, from Avatcha Bay, east coast Kamchatka); Schmidt, P. J., Compt. Rend. (Doklady) Acad. Sci. URSS **15**(5): 279–280. 1937 (see this paper for synonyms and literature).

Since the two specimens reported here are probably the first published record of the occurrence of this species on the American side of the North Pacific Ocean, I record in Table 3 data from them.

U.S.N.M. no. 119387, taken in Canoe Bay, Alaska, September 19–21, 1940, in a gill net at 30–40 fathoms by Dr. W. L. Schmitt.

Triglops metopias Gilbert and Burke

Triglops metopias Gilbert and Burke, Bull. U. S. Bur. Fish. **30**: 50, fig. 8. 1912; Soldatov and Lindberg, Bull. Pacific Sci. Fish. Inst. **5**: 195. 1930; Taranetz, Bull. Pacific Sci. Inst. Fish. Oceanogr. **11**: 109, 110. 1937; Andriashev, Explor. Mers URSS, Instit. Hydrolog. Leningrad, fasc. **25**: 303, 1937.

Because this species is rare and seldom reported, it was thought best to give here a brief description.

U.S.N.M. no. 119438, one specimen taken in Canoe Bay, Alaska, November 4, 1940, by Dr. W. L. Schmitt.

The following measurements in millimeters were made on a specimen from Canoe Bay, Alaska, collected by Dr. W. L. Schmitt, November 4, 1940: Standard length 107; head 32.5; snout 11.1; eye 9.1; interorbital space 3.0 postorbital length of head 12.5; greatest depth of body 15.2; least depth of caudal peduncle 3.8; length of caudal peduncle 15.5; maxillaries (tip of snout to rear of maxillary) 15.0; length of longest (sixth) dorsal spine 12.2; longest soft dorsal ray 12.8; longest anal ray 11.0; longest caudal fin ray 18.5; shortest (middle) caudal fin ray 12.8; longest pectoral fin ray 26.2; longest pelvic ray 15.2; length of base of soft dorsal 44.5; length of base of anal fin 43.5; snout to origin of first dorsal 29.7.

The following counts were made: Dorsal X, 26; anal 24; pectoral 20; plates in lateral line 51; gill rakers 0 +7.

TABLE 3.—COUNTS AND MEASUREMENTS ON TWO SPECIMENS OF EURYMEN GYRINUS. (Measurements expressed in hundredths of the standard length.)

Character	Specimen	
	1	2
Standard length	131	140
Head length	42.0	45.4
Fleshy interorbital	9.93	11.1
Diameter of eye	7.64	7.15
Length of snout	9.55	11.1
Postorbital length of head	24.4	26.8
Length of upper jaw	19.8	20.7
Greatest depth	29.8	32.1
Least depth	6.64	7.15
Length of caudal peduncle	8.24	9.86
Longest ray pectoral	26.0	26.1
Longest ray caudal	23.7	22.8
Length base dorsal	60.0	57.5
Length base anal	29.6	33.5
Dorsal rays	31	30
Anal	16	16
Pectoral	24	24
Gill rakers first arch	0+8	0+9

PROCEEDINGS OF THE ACADEMY

379TH MEETING OF THE BOARD OF MANAGERS

The 379th meeting of the Board of Managers was held in the library of the Cosmos Club on December 14, 1942. President CURTIS called the meeting to order at 8:07 P.M., with 19 persons present, as follows: H. L. CURTIS, F. D. ROSSINI, N. R. SMITH, W. W. DIEHL, J. E. GRAF, F. H. H. ROBERTS, JR., F. G. BRICKWEDDE, H. B. COLLINS, JR., F. C. KRACEK, F. M. SETZLER, J. B. REESIDE, JR., J. E. MCMURTREY, JR., W. A. DAYTON, W. RAMBERG, E. W. PRICE, L. W. PARR, C. L. GARNER, and by invitation G. A. COOPER and A. SEIDELL.

The minutes of the 378th meeting were read and approved.

President CURTIS announced that R. J. SEEGER (chairman), F. G. BRICKWEDDE, R. W. BROWN, G. A. COOPER, and F. D. ROSSINI would compose the Committee to make recommendations concerning the printing and publishing of the JOURNAL, and that ALEXANDER WETMORE would compose the Committee to investigate the purchase by the U. S. Office of Coordinator of Inter-American Affairs of copies of the JOURNAL for distribution to libraries in South America.

In accordance with the action of the Board at its previous meeting, the Executive Committee studied the matter of recommending to future Boards the use of accumulated surplus, if necessary, to avoid curtailing the JOURNAL. At a meeting held just preceding the meeting of the Board, the Executive Committee, with H. L. CURTIS, J. E. GRAF, L. W. PARR, and F. D. ROSSINI in attendance, prepared the following statement: "The surplus in the treasury of the Academy has been accumulated to further the work and usefulness of the Academy. The Academy should build up this surplus to insure the future usefulness of the Academy. Withdrawals from the surplus should not be made unless absolutely required to continue its service to science. On this basis, modest withdrawals from surplus might be made to continue the JOURNAL and to maintain the normal high standards of the meetings of the Academy. However, such withdrawals should be made only after all reasonable steps have been taken to increase the income and reduce the expenses of the Academy." The Board voted to place this statement in the record.

The Committee to make recommendations concerning the printing and publishing of the JOURNAL presented a report carrying the following recommendations: (*a*) That the Board of Editors be given the power to publish a minimum of 6 bimonthly issues a year for the duration of the war whenever it decides, with the approval of the Executive Committee, that the objectives of the JOURNAL will be best met by such a change; (*b*) that the Board of Editors be instructed to study the various offset processes that could be used for printing the JOURNAL, with a view to their consideration by the Board of Managers after the war. The Board approved both recommendations as submitted by the Committee.

The Committee to investigate the purchase by Office of the Coordinator of Inter-American Affairs of subscriptions to the JOURNAL for distribution to libraries in South America presented a report advising the Board that the Office of the Coordinator of Inter-American Affairs would be receptive to a letter from the Academy informing them of the cost of subscriptions to the JOURNAL and of the present distribution of subscriptions in Latin America. The Board instructed the Custodian and Subscription Manager of Publications to send this information.

The Secretary reported two deaths and one resignation.

The Treasurer presented a report showing that to date the income of the Academy was actually $200.52 higher for 1942 than the amount of income for this year estimated in January, 1942.

The Custodian and Subscription Manager of Publications reported the number of free subscriptions to the JOURNAL and the number of Government bureaus that subscribe to the JOURNAL.

The meeting adjourned at 9:39 P.M.

315TH MEETING OF THE ACADEMY

The 315th meeting of the Academy was held jointly with the Anthropological Society of Washington in the Assembly Hall of the Cosmos Club at 8:15 P.M. on December 17, 1942, with President CURTIS presiding. JULIAN H. STEWARD, Vice-President of the Anthropological Society, introduced the speaker.

MATTHEW W. STIRLING, Chief of the Bureau of American Ethnology of the Smithsonian Institution, delivered an address entitled *Anthropological explorations in Netherlands New Guinea*. Mr. Stirling described how an expedition of 700 men, sponsored jointly by the Netherlands Government and the Smithsonian Institution and operating under his direction, entered New Guinea from the north by the Mamberamo River and reached the Snow Mountains, where an interesting negrito population living in a stone-age culture was discovered and studied. The lecture was illustrated with moving pictures. About 175 persons were in attendance.

FREDERICK D. ROSSINI, *Secretary*.

Obituary

In the sudden death of Henry Corbin Fuller on August 26, 1942, at New Haven, Conn., the Academy has lost an active member, the vice-president of its Biological Section, and his associates have lost a valued friend. He was born on November 13, 1879, at Worcester, Mass., where he also secured his basic chemical education at the Worcester Polytechnic Institute. After graduation in 1901 he was engaged by commercial houses in analyzing drugs and chemicals used in the production of medicines. Later he entered as a chemist the U. S. Department of Agriculture under Dr. Harvey W. Wiley, whom he referred to as his mentor, working on problems incident to the Food and Drug Act of 1906. Collaborating with Dr. Wiley in his work for *Good Housekeeping*, Fuller did much of the analytical work on the articles discussed in "1001 tests" published in 1914. During the period covered by the World War, Fuller was in the Institute of Industrial Research of Washington, at the same time supervising drug propagation on a commercial scale and managing a drug farm in Virginia, growing digitalis and other important medical plants—1914–19. Although active officially, he found time to publish three books of note: *Medical preparation*, 132 pages, 1912; *The chemistry and analysis of drugs and medicine*, 1,072 pages, 1920; *The story of drugs*, a popular exposition of their origin, preparation, and commercial importance, 358 pages, 1922. He published also a number of shorter papers on current chemical subjects. He was secretary of the Scientific Section of American Pharmaceutical Association, 1917–18. He spent some time in Europe during 1922 and 1924 on problems concerning the wine industry of Italy and France.

One of Fuller's avocations, in which he used great care and discrimination, was the bringing together a wonderful collection of stamps, containing 27,000 different forms, which is more than one-quarter of all the world's issue. The United States part is noted for its rare stamps and for the completeness of its series.

Ornithology also was a pet avocation, and he never lost an opportunity to observe birds in their native haunts. Birds are so closely associated in their habitat with varied and diverse forms of other life that he who follows them soon learns that Nature has in store other treasures for those interested, and that the Great Outdoors is a real paradise for those who delve. This was as Fuller thought. On an occasion, in order to broaden his view of the wilder country and its animal and plant life, he made a trip through the West to the Pacific States and British Columbia with friends who were familiar with the whole region. Every time he saw a bird or mammal new to him in life, he was thrilled by the experience.

As a well-known chemist and nature lover with his easy and cordial manner of approach, Fuller had a wide and varied acquaintance, especially among kindred spirits whose problems were similar to his. He was a good court witness, defending his case with clearly stated facts, and with a facile tongue effective in either thrust or parry. He was much interested in the activities of a debating club that he entertained at his home, and he took special delight in the wide variety of subjects that come up from time to time and the expertness with which they were handled by real authorities.

Fuller was a man of good breeding, with a fine sense of honor, strict regard for his obligations, and consideration for the rights and feelings of others; hence a gentleman, whom we shall sorely miss. He had such perfect understanding with his children that this close communion with their father always will be among their most cherished memories.

He was an associate member of the American Ornithologists' Union, member of the Washington Biologists' Field Club (president), Biological Society of Washington (president), Baird Ornithologists Club, Washington Academy of Sciences, Cosmos Club, American Chemical Society, American Pharmaceutical Association, Society of Chemical Industry, London, and Fellow of the American Institute of Chemists.

He is survived by his widow; a son, Henry Shepard Fuller, M.D.; and two daughters, Mrs. Thomas Watson and Miss Josepha Fuller.

A. K. Fisher.